

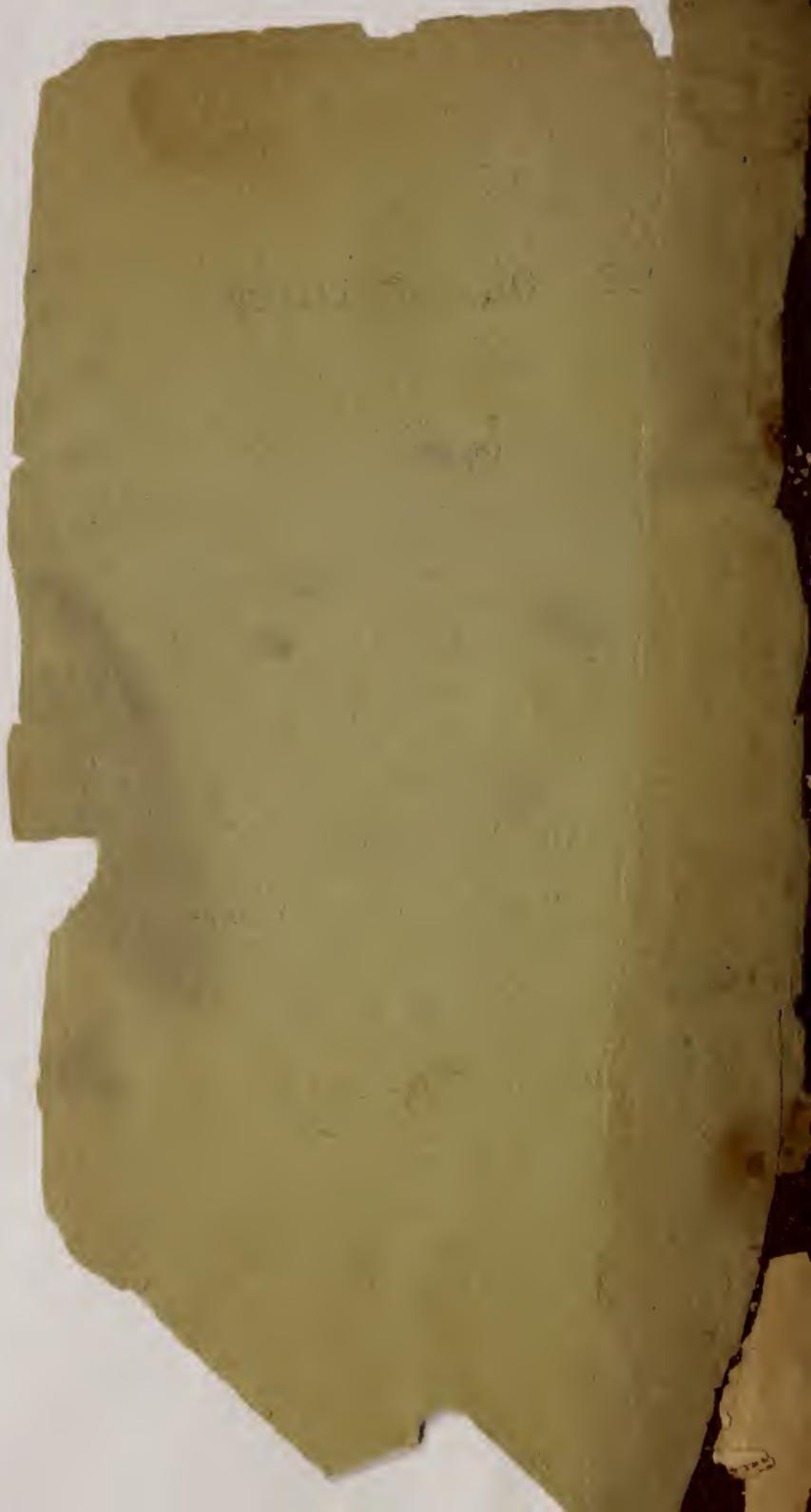
Notes of Lectures
ON
MEDICAL PSYCHOLOGY.

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REPORTED BY A STUDENT,

John W. Brown

MEDICAL FACULTY, TO



Presentation copy
To my friend
John Birrell Esq.
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NOTES ON MENTAL DISEASES.

BY A STUDENT.

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ΣΚΙΑΣ ὄρας ἀνθρώπος

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MATTER AND MIND.

THERE is nothing you can predicate or assert of mind that you can assert of matter. For instance, matter has resistance, density, specific gravity, extension, outline, etc. These are primary qualities you attach to material substances, but you can not apply any of these qualities to mind. The mind has the phenomena of consciousness to which we give the names of imagination, reasoning power, affection, etc. The body has none of these qualities, as matter, sensation, will, emotion ; therefore, how can we apply to mind a material existence when there is nothing you can apply to it in common with matter beyond mere existence. Punch quaintly says, "What is matter ? Never mind. What is mind ? Never matter." Think of our own minds. I touch the desk ; molecular action is set up in the nerve which reaches the brain cells ; that which is nothing but nerve thrill, becomes when I am cognizant of it, a sensation. In this I am cognizant of nothing but what is physically presented, namely, consciousness. Edwards held, in his work on the will, that we were controlled solely by motives outside of ourselves. These *ab extra* motives were sufficient, and caused one to act outside of any spontaneity within ourselves. Hopkins, of Andover, replied in this way : If there were two bundles of hay placed some distance apart alike in size and appearance and in every respect, and an ass were put between them, he would starve, because the influences outside to act were equal. I have no doubt he would show motives inside of himself which would lead him to choose one bundle or the other irrespective of outside causation. (Laughter.)

DEVELOPMENT OF MIND AND OPINION THERETO.

In the early days the mind and body were held to be two substances, both material. The Greek philosophers, as well as the early Christian fathers, believed this. Lucretius, who lived in the century before the Christian era, proved the immortality of the soul on the basis that mind was matter ; that as matter was indestructible, so the mind must be; and hence immortal. Then, the second theory was proposed, that of the body being matter and the mind not ; and another, that mind and matter were a unit. The Pantheistic idea was very common, that all matter was God. I think it is Shelley, in his "Queen Mab," who says :

" Infinity within, infinity without,
Belie creation,
The inexterminable spirit it contains
Is nature's only God."

Others hold we have a soul—a higher and distinct power and substance which has the capacity of formulating judgments. The science of mind I reduce to three divisions :

I.—States of consciousness, viz., that which I feel myself, and examine, and classify. This is the subjective method of studying it.

II.—The study of it in others—the objective method, by the words, acts, and gestures of those around us.

III.—Study of the nervous system, in health and disease.

We do not know what mind or soul is ; we only know it by its manifestations. Its essence is an unknown quantity. Is it not so with everything in nature ? There is mystery everywhere. Is there not a force, law and ultimate essence in everything in nature into which we cannot penetrate ? Is it not so in an ascending series of existence from simple to complex ? The same unknowable exists behind the laws of affinity, adhesion, or attraction. If you take a glass and put in it a little epsom salts, saltpetre, and say table salt they disappear, and you cannot discover them even with a microscope. Then take a piece of glass, upon which you

place a drop. Magnify so that the shadows will fall upon a screen, and the moment the water begins to dry, crystals begin to form, and the shadows are thrown on the canvas. You will notice the crystals forming as if they were an army of individuals, and a great commander was calling those atoms together, in order, each particle going to its proper headquarters, or crystal. Every facet and angle, and everything that distinguishes the one crystal from the other, will form without a single mistake. Again, take a box of one kind of earth and place in it different seeds. The microscope can find no vitality in these seeds. They may have been dormant one thousand years. The seeds are planted, and, though they have the same sunlight, moisture and air, yet they spring up into plants with different leaves, flowers, odors and medicinal properties, each according to its kind. One may be rank poison ; another may be perfectly innocuous. You have each selecting out of the common material, and building up according to specific law. What are our bodies but cells, that select each according to its kind, under the dominion of that hidden force which forms the individual with much in common and much that is diverse. Our food becomes a chemical solution and then becomes a vital element, and goes to supply the cells of bone, muscle, and nerve substance. Each cell of our body selects out of this common material what it requires for its particular structure. Behind all there is an intelligent force guiding all these laws. Why should the materialist accept the lower force and still deny the higher power called mind ? Both are beyond his ken, except in their workings and manifestations.

MEANING OF MIND—

There have been a great many discussions in the world over the meanings of words ; hence, the necessity for a correct definition. The metaphysician has one idea of the meaning of mind ; the theologian another ; the materialist and the physiologist another. The old Romans and Greeks held that the mind meant every living thing from a cabbage head up to a Socrates. The theologians make man a sort of

tripartite being, consisting of body, soul and spirit, the soul being that which we have in common with the animal, and the spirit that which is immaterial and immortal. Lucretius, who lived in the century before Christ, and who went to school with Horace and Cæsar, said: "You can destroy nothing. Man has a mind. Mind is matter; matter is indestructible. Therefore mind is indestructible." Many physiologists hold that mind is only an emanation of nerve substance; that which the spinal cord does in its functions is mind; that as the liver secrets bile, so the brain secrets mind; that mind is nerve action merely; in short, that all nerve action is mind. Descartes started out with *Cogito ergo sum*; although the converse is equally true. This is not a self-evident axiom. We believe the mind uses the brain, that it does not emanate from it.

The metaphysicians hold that mind is a distinct entity from matter. This is proved from its manifestations outside of yourself. First, by any mental phenomena which you see in others made like unto yourself. This is objective. The second proof is by the appeal to consciousness. The material physiologist denies that consciousness can be appealed to. "You cannot," he says, "appeal to consciousness because you appeal to consciousness in a past act, not in the present; that your own mind cannot be the observed and the observer at the same time." Physiologists mean by mind all nerve action—not simply brain action, but action of the spinal cord, the great sympathetic, etc. They consider that mind does and can act without consciousness. The idea has been promulgated by Huxley, Herbert Spencer and others, that you get other nerve centres that can do intelligent work without consciousness. For instance, when we begin first to walk, we have to put forth strong efforts of will to keep in an upright position. After a while we run and walk, play football and cricket, etc., without thinking of the motion of our legs at all—that is intelligent work without consciousness; consciousness in the first place, unconsciousness after. So these men say you should not appeal to consciousness in dealing with the question of mind apart from matter. For

example, the physiologist says: "Take the nervous system of the oyster and represent its amount of mentality as 1, the earthworm's as 2, the spider's as 4, the dog at 20, the monkey at 70, man at 100. The amount of nerve action can be predicated from the amount of nerve substance—the more nerve tissue, the more mentality. They hold that mentality is a secretion of the brain, as bile is of the liver. If you kill the nerve substance you destroy all. When the brain mixes with the clods of the valley the mind disintegrates with it. Are their conclusions correct? Can I tell, after seeing a certain piece of iron, how much magnetism it will hold? Because I can predicate of another piece of iron that it will contain a greater amount of magnetic power than the smaller can, I conclude that the iron creates the magnetism? So, because man has a larger amount of nerve tissue than the lower animals, does it follow that the nerve tissue creates the mentality? Let us for an illustration take a triangle divided horizontally into five compartments from below upwards. Say the lowest represents the animal life, the next higher the instincts, then the lower intelligence, then higher intelligence, and highest the moral nature. A child lives on the lower planes for months, not having any more mentality than a chick or pup. At three or four years it begins to get complex ideas and leaves the animal creation behind in mind power. The power of abstraction is beyond the normal animal's capacity. A horse may have an idea of color, such as white, but not of whiteness, so none of gravity, density, vitality, etc. Our most complete abstractions are our ideas of time and space. We cannot believe in the existence of a condition in which time and space could be destroyed. Then we have the moral nature—a conscience that tells we ought, or ought not to do certain things. Our physiological friends say that is acquired, that it is not natural, but gotten from environment, education, etc. This faculty within us of formulating moral judgments lies outside of our education. A savage would think it wrong to kill his mother. It is true, the Indians leave their aged to perish; but that is acquired, their habits lead to it. The primary faculty of

"oughtness" is in all intelligent minds as a primary existence.

This moral faculty must depend on the intellectual. The idiot has no morals, because deficient in the intellect. The insane have no morals, because the intellectual part is diseased by which they are able to appreciate the moral quality of an action. Conscience is not God's vice-gerent considered apart from intellect. Conscience is a judge that sits upon the bench and determines the quality of an act by means of the evidence presented. If the evidence presented to the conscience is wrong, the decisions will be wrong. The mother who crushes her maternal instincts and throws her child into the Ganges—conscience tells her to do this because her intellectual appreciation of the act is not placed properly before this judge that is her inward monitor. So the ignorant have not such acts presented to them in a proper way for the moral judgment to act upon. For example, if a man drown and another stand by and not try to succour the drowning man, you say the delinquent is a murderer. But he explains the reason he could not help was that his hands were tied. Your intellectual appreciation of the new idea cancels your opinion of the act, and you say he is not to blame. The intellect at last presents to the moral nature the evidence correctly. An enlightened conscience is the highest that a man can possess. The inverse process to that of development is the mental dissolution. In an attack of insanity the moral nature goes first, then the abstract ideas, then concrete ideas, until, perhaps, only the mere animal life is left, as in dementia.

ANCIENT HISTORY OF INSANITY.

At the opening of this lecture, the superintendent showed some keys, chains and tools, which had been made by some of the ingenious inmates from bits of bone or waste metal which they had picked up. The keys were made from a pattern of the keys which opened the wards, which the patients had seen in Dr. Clark's hands as he passed through the wards. They proved to fit the key holes accurately. It

is surprising how the insane can adapt means to ends, and show a cunning that many sane people might envy.

In the days of Moses one of the curses was that the Lord would strike the disobedient child with madness. David made a pretence of madness before Achish, King of Gath, and Nebuchadnezzar ate grass like the oxen for some years and recovered. In Bible times the so-called lunatic was the epileptic. The moon has no effect on the insane. The devil-possessed or demoniacs were supposed to be under the power of some invisible influence which caused them to do acts over which they had no control.

Law never advances. It gets hold of precedent, and hangs with the tenacity of death to it. Its definition of insanity is wrong. We should remember that insanity is a fixed physical disease, which abnormally controls the words and actions of an individual. It is not a physiological process, but a pathological. Take an eccentric man, full of cranky notions ; he is not insane. He is naturally cranky. Take Guiteau, who killed Garfield. He always was cunning, eccentric, and egotistical ; he was not insane. The world is full of cranks, riding some hobby of some kind. It may be harmless, and it may not. Insanity is not congenital. You may have idiots and imbeciles congenital, but if the condition is such, it is physiological, not pathological. If a child is born with a defective brain, and that brain never grows, it is not a disease of the brain. Its mental capacity is circumscribed for want of development. Neither is pure wickedness insanity. Many men are wicked along physiological lines, but not pathological. Insanity means, first, change of conduct ; second, low mental power ; third, low moral power (and the moral depends on the intellectual) ; fourth, morbid fancies. In the lowest forms of it, we get mere organic life, yet all are from physical disease in the brain either primarily or secondarily.

Blackstone says, "Insanity is a disease in which the person affected is without good memory and understanding." This definition is not correct. In 1843 a number of English judges formulated a definition of insanity. It is still the recognized definition in English courts, and, as a conse-

quence, because of this dictum, lunatics are often hanged. The test is the inability to distinguish right from wrong, and is not a good definition to go by, for many insane do know right from wrong ; demented do not. A simple definition of insanity is mental incordination, or that it is a fixed bodily disease which abnormally effects and controls the language and conduct of an individual.

No specific definition can ever be formulated, as no two persons are alike, either mentally or physically. There is similarity, but no identity.

a It is a fixed disease to distinguish insanity from mental conditions—conditions produced by fever or toxic agents.

b It is always a *bodily disease*.

c It is *abnormal* to the individual.

d It may not always absolutely *control* in mild forms, but it always *affects* the language and conduct.

In view of the substantial progress made during the last fifty years in mental physiology it is surprising that medical men know so little about it. They often fail to diagnose the condition and the progress the study of such diseases has made among the specialists.

When the brain is affected, every organ in the body must suffer. The old idea that insanity is due to demoniacal possession rather than disease is exploded, and if such absurdities relative to the insane be indulged in by those who profess to belong to the educated classes, what may we expect from the ignorant classes. The ignorant receive no light from the educated classes on this subject. This wide spread ignorance will be overcome when people are taught the nature of disease and their treatment. If the public were made aware that insanity is a disease of the body, the treatment of the insane would be different, even at the homes of those thus afflicted.

The diagnosis of insanity is one involving much tact and accuracy. The demands of the present time require of the trained physician a knowledge of brain pathology ; such knowledge is necessary in many cases when one is examined by lawyers. When you are asked about the opinion of cer-

tain authorities, you may say that you have nothing to do with them and their opinions, only of your own. It is a matter of observation, not of hearsay, as far as you are concerned.

The insane man differs from the sane by reason of some pathological change in the brain, or higher nerve centres. Because a man falls below a certain standard of morality, it cannot be concluded that he is insane. If so, all criminals ought to be committed to the asylums instead of penitentiaries; instead of men of a lower type of intellect we have men of higher intellectual powers in our prisons, such as the forger, who has been a bank clerk or manager. There are different classes of criminals; some men are born criminals, others are made so by circumstances. These are always to be distinguished from criminals by nature. If moral turpitude is to be designated by the name of insanity, persons of this quality should be sent to the asylum. Badly organized brains cause men to be wicked; but there is no disease to account for their peculiarities. Such people are unable to view their acts from the standard of their better constituted neighbors. I believe there are men who steal, and cannot help themselves, when exposed to temptation. Shop goods should never be put in the streets to tempt such people. Regarding the trial of the insane, a man is supposed to be tried by his peers, but to have men who never studied the disease of insanity, constituting the jury to determine whether a man is sane or not, is wrong; so is it in a case of malpractice; as for example, where a farmer acts on a jury and hears expert witnesses giving medical evidence regarding femurs, trochantes, etc. Jurisprudence is lacking in this respect. If a person tried is suspected of insanity he should be put in a criminal asylum and observed; if not sane he can be remanded for trial. Reformatories must be established that these may be helped; mere punishment does not reform. Past ages have taught this lesson, but to reform the vicious there must be brought to bear on them good environment. There must be work, instruction, discipline, sympathy and affection. So long as force alone is upheld, so long will criminals be hardened in crime. When

the courts show they hate the crime, and not the criminal, what great encouragement will then be held out to victims with deranged organizations to avail themselves of all the influences for reformation !

It is hard to say when insanity begins. There is a border-land between sanity and insanity that no man can see ; but the individual himself knows that he is not the same as he formerly was. It is only when the symptoms make themselves manifest that others know the state of the patient ; but there is a wide belt between the normal man and the insane man when insanity manifests itself. Men have told me that during this transition period they have noticed themselves lose interest in life, lose their power of attention, lack concentration in business, not having the same affection for their family, feeling their ground slipping from under them, as it were, "losing their mental grip." The transition is imperceptible—as the blending of the colors of the rainbow, or as the darkness coming when daylight is departing.

ILLUSIONS.

Illusions are errors of perception. Perception is not a concept merely ; it is what you are cognizant of through the senses : conceptions are purely mental. In illusions you have to have real objects to begin with. It is only a partial change in the mind of what you see into something else ; it is an unreal perception. If I imagined that a pen was a serpent, I would have the pen to start upon as a real object, but it would be an illusion on my part in imagining it to be something different from what it actually is.

An illusion, then, is the change of a real object in one's mind into something it is not. The effect of old superstitions on one's mind, though sane, makes a man very susceptible to believe in illusions. Illusions may arise from (1) disorders of senses, (2) from errors of judgment upon data derived from the senses. You have an example of the latter as you sit in a stationary train and watch a neighboring train move, in thinking that your own train is moving. Illusions of the senses are common in our judg-

ment of distance, color, motion, and distant objects. For instance, at the horizon at sea you think you see a ship—expecting to see a ship, a speck may be taken for one. A stick standing in the water appears broken. Distant objects often may appear to move. But all such illusions are rectified by the sane judgment. Amongst the insane, illusions of the most varied and diverse character are among the most constant and persistent symptoms of mental disorder. However absurd such may be to us who are sane, to the insane they are facts, and no amount of reasoning can drive them away. On the contrary, such methods only intensify the affection. Instead of trying to argue them out of their illusions, it is better to get their minds entirely away from them, not discuss such at all. The mental disease is present, and this condition is a symptom of the disease. There was a man here who believed he was glass, and wouldn't allow anyone to touch him, thinking he would get broken up. You couldn't convince him to the contrary, even by pinching his arm. One girl believed she had no mouth, although a tube was put in that aperture daily for eighteen months, through which she was fed. Another thought he was a steam-engine, and that he would be blown up. If only the sight be involved in the illusions, the ear and sense of touch may correct the morbid fancy; but when, as is frequently the case, all these are supposed to give wrong impressions, then the detection of the illusions become impossible. The illusions of dreaming, night-mare, and somnambulism are familiar to you. The existence of these in this sense gives a faint idea of insane illusions.

HALLUCINATION.

Hallucination differs from illusion in that it is throughout a false perception. The senses give to the mind sights, sounds and other sensations which have no existence. One class of sane people look on hallucinations as unreal and deceptive, some look on them as revelations to men to instruct, warn and guide. In considering hallucinations and delusions, we must take into consideration the educa-

tion and the surroundings of people, because many superstitious people will believe many things are not delusions, but facts, and use them for the purpose of guiding them on their way to heaven. In the sane, the hallucinations of sight are more frequent than those of hearing. In the insane, the reverse is true. A very common kind of hallucination is the hearing of voices in the walls, ceiling or floor of rooms. The insane hear singing, talking, etc. That particular kind of insanity in which the hallucinations are so intense as to guide the conduct of the individual, is the one often to be dreaded. The patient may say he hears the voice of God telling him to kill someone, and considers it his duty to do so—it may be his children or himself. This voice controls their action, and they believe they are doing a Divine work. It is astonishing, in sane people, how many are afflicted with hallucinations. Buckley, by holding his breath and producing congestion of the brain, saw all kinds of figures. Napoleon had his star. Castle-reagh saw a child, when he had passive congestion from overwork. Lincoln, in three epochs of his life, always saw a ship that was sailing swiftly along. He saw it before the great convention at Chicago in 1860, when he received his nomination; again before the end of the war, when his mind was perturbed because of the anxiety to know what the result of the Virginian campaign would be; and also before his assassination. Malbrouche used to hear a voice calling him. Descartes, after severe study, heard invisible persons talking to him. Ben Johnson saw his mother. Byron was epileptical, and had visions. Goethe used to see a counterpart of himself coming to him. If we imagine we see certain objects, they become almost as though they existed, from mere concentration of thought.

CLASSIFICATION—

1. Some are involuntary and obtrusive.
2. Some are voluntary and producible.
3. Some are compatible with reason. There are others that are either original, or by persistence become compatible with reason. Some are rectified by the understanding, others are not.

4. Some occur in a state of apparently perfect health, others are dependent upon deranged conditions of the mental and bodily functions.

5. Some of the most distinctive are produced by the action of narcotic agents. Where only one of the senses is involved, the impression is easily corrected as a rule; but where two are simultaneously affected the difficulty is hard to overcome. I know a sane, sober man, who says he has often seen his house swaying as if about to fall. He removed into another, attached to one on either side. His new abode still appeared to sway, and he could scarcely convince himself that he was incorrect. I know a medical man who says if he goes down a certain street he will get hurt. So we see how wrong ideas get fixed in the minds of sane people. The judgment will correct, but the fancy repeatedly returns. It is functional abnormality under physiological law.

DELUSIONS.

A delusion is a false conception. It is an idea generated in the mind without having been primarily suggested by the organs of perception. Such are the insane who consider themselves monarchs. We have nine queens here. It is seldom a man thinks himself a king. I have to put the queens in different wards, or we would have an empire within an empire, and anarchy. One man believes himself to be the Duke of Wellington, and fought at Waterloo, and thrashed the French; others think they are demons. I do not wonder the ancients thought some of the insane were possessed of devils. You would consider the old demoniacal idea very suggestive if you knew some of the insane in their daily life. The old idea of demonology is exploded long since. There is no reason to believe the mind is diseased. If the organ through which the mind works is healthy, the mind will always do its duty. If the mind were diseased, it would have taken a step towards extinction, and where is its immortality? The mind cannot operate through an organ out of tune. You might place a Mozart or a Beethoven behind an organ which is not in tune, and he could

not bring out of it harmony. The brain is the organ through which the mind works ; if the mind does not work properly, it is because of the pathological condition of the brain, and it (the brain) should come under medical treatment, as in any other physical disease.

LUCID INTERVAL.

This means an entire recovery from insanity at times in the course of the disease. It is not simply a remission but an intermission. It is often brought to notice in regard to the matter of wills and contracts by the insane. A man may be rational, and yet not sane. People attach irrationality with insanity. Many insane are rational at times. This is proven every day in our asylums. An irrational man could not do intelligent work ; he could not bring his ideas together, couldn't focalize his will to do any kind of work. You will notice two bird houses as you go out to the street. The man who made them was one from whom you could not get a sensible word. Although insane, he was rational enough to do mental and physical work in the line of his occupation. It is not always unconscious cerebration. You know how we will do things mechanically without our minds being absolutely fixed on them. Take for instance, a type-setter. How careful he is in the beginning to focalize his mind on his work, but, after long practice, he does his work almost unconsciously. So, with the young lady learning to play the piano. After practising some time she plays almost automatically. So the insane, who have mastered a particular line of work, are able to do that work although the mentality is affected. They are rational ; we have them here at all sorts of work. Of course this condition of rationality is not that of all the insane. In chronic dementia we have no such mental activity.

IMPULSE.

This term suggests no idea of insanity when taken alone. It is often used to describe a sane act, such as impulsive suicide, impulsive homicide ; for a sane person does commit

suicide. But suicidal impulse and homicidal impulse refer to insane acts. They are acts of a morbid mind. In court guard yourselves in respect to these terms. It was a common thing years ago for a guilty man to escape under the plea of impulsive insanity. No man becomes insane for a few moments to accomplish a specific act. A pathological condition cannot come on in a moment, and go back to a physiological one at once. A man must continue insane after the act is done before you can declare there is any pathological change. A man killed his wife in a most brutal way. The insanity plea was set up. He was sent here ; but I made up my mind at first that he was pretending ; that there was no insanity about it. I tried the effects of chloroform, electricity and alcohol upon him, but he remained consistent in his insanity. He was watched night and day, but his stupidity and lack of interest in everything continued. He is still in the asylum at Hamilton, and was doubtless insane when the homicide was committed.

I knew of another instance of a man in the eastern part of the Province who killed his father and mother and maimed one member of the family. This young man had never shown any homicidal propensities before this time. He was taken to jail. He was an intelligent young fellow. The plea of insanity was set up. He practised all kinds of insane tricks, and in the most incongruous way. I was called to visit him, and saw that he was shamming. I said to him sharply, " You had better stop that ; this is all a pretence." This produced a marked effect upon the pretender. He was tried and executed. The father was about to mortgage the farm. He (the son) was heir. This was, without doubt, what led him to commit the deed. He wished to possess the farm free of all incumbrance.

The insane can reason along lines of thought familiar to them. Mechanics require less mentality to work along accustomed lines than in other occupations. In their speech the insane may show but little defect in mentality ; but when they come to express their thoughts in writing, their delusions become apparent. This fact the Doctor verified by reading several letters which were very incongruous. It

needs more mentality to formulate words in writing than in speech.

HEREDITY.

Although parents may not be insane, the tendency may have been bequeathed from the grand-parent. It often skips a generation and re-appears. Insanity is never bequeathed, only the tendency thereto. Gunpowder will not explode until the spark is applied, but the explosion tendency is there. The tendency of health has been the sustaining power of the world.

Enquiries regarding heredity.

1. Is heredity more frequent in the mother or father ?
 2. In cases of such transmission to the offspring is the tendency transmitted to a greater number of the offspring by means of the father or the mother ?
 3. Is insanity more frequently transmitted from the mother to the daughters or from the father to the sons ?
1. The insanity of the mother as regards transmission is more serious than that of the father, not that the mother's disorder is more hereditary, but because she transmits it to a greater number of children ; this is assuming that the likeness of children as compared with the father's is rated as 3 to 2.
 2. The transmission of the mother's heredity is more to be feared with respect to the girls than to the boys, that of the father's is more dangerous as regards the boys than the girls.
 3. The transmission of the mother's heredity is scarcely more to be feared as regards the boys than that of the the father's, although much more likely in the line of daughters.

LAWS OF HEREDITY—

1. The constitutions of father and mother and ancestors are blended in their offspring.
2. The offspring of healthy individuals are more likely to inherit the cast of the most strongly constituted parent, or the particular organs most strongly developed in either.

3. In acquired constitutional change, whether of disease or development, the impressions made may be so strongly made that the tendency to reproduce may be stronger than that to resume the normal condition.

4. Strong mental impressions occurring in either parent, though of comparatively short duration, may prove to be dominant in the offspring.

5. There may be an intensity of certain mental impressions in the offspring as the result of combined impressions of both parents.

6. Parties whose ancestors have been habitual drunkards, and who are constitutionally affected by it, show it in their lineaments and in their mental peculiarities. In such, drunkenness has become a fixed, physiological habit, arising out of repeated and continuous excesses. As has been well said, by somebody, the repeated acts become a habit, the habit becomes a vice, the vice becomes a life history, and a life history becomes a destiny.

RELATIONSHIP—

You can lay down no general rule with regard to cousins in insanity. Neither can you lay too much to the fact that a brother or sister is insane. Suppose a woman has puerperal mania, and three or four children are born—two before and two after the attack. The first two may not come under the influence of insanity ; the last two would. Of course, that is assuming there is no heredity.

Is the tendency to the same form of insanity transmitted? Frequently it is so ; not always. The exact counterpart of the parents is not transmitted. So it does not follow that mania, melancholia, dementia in the parent are all necessarily reproduced in the child.

Suicide and dyspsomania give startling results, as to transmission of like weaknesses ; but not enough to enable us to formulate a physiological law. The insane tendency in respect to them is merely transmitted to a startling extent.

A parent may transmit the tendency to insanity, but there may be no physical and outward resemblance between parent and child. There is, no doubt, a resemblance be-

yond external appearances between them, in the ultimate elements of the body, but beyond our ken. The lower forms of mental disease, as imbecility, low, insane, moral tone, etc., are more transmissible than any other forms of mental deficiency.

We may find no apparent cause given for manifested insanity, but in nine out of ten the hereditary tendency is there, if we can only find it. In our molecular existence abnormality exists beyond our research.

IDIOSYNCRASY—

It is strange how individual differences show themselves in foods and medicine. All people do not tolerate medicines the same. If, in the ultimate elements of our bodies, we were all precisely similar, we would never have manifested the so-called idiosyncrasies in the administration of medicines. Some tolerate opium, others find it a bane to them ; so, with aconite chloral, belladonna, etc. Diversites of the great nerve centres are shown by particular forms of medicines attacking certain parts of the body, and not others. One acts on the spinal cord ; another the brain, etc. Is the difference in the medicine, or nerve centres, or both ? Some kind of stimulants have different effects on individuals. Take whiskey in its effects on a number of men, and notice its diverse effects. One man has a partially paralyzed tongue, another cannot walk, another has general unsteadiness. The whole man is affected ; but no two are drunk alike. Don't experiment. (Laughter). The same element, alcohol, has produced those different effects on individuals, because in their molecular constituents, men differ one from the other.

In man's complex organic being, the law of inheritance of like qualities is usually modified by the laws of variation. The son is not the exact image of his father or mother, nor has he simply a mixture of their qualities. Were the whole law one of simple inheritance, he would be the exact counterpart of both. It is impossible to predicate the character of the child from the father and mother. Solomon, the wise, did not claim to know by

parents whose the child was. Twins are very alike in features, but not in mental character. Nor have the one half of monsters a similar disposition to the other. The Hungarian sisters were very different in character, although the same blood served both. The Siamese twins didn't live happily together, one giving way to drink. They quarreled much on diverse subjects, yet they had one blood supply. Maudsley says the insane neuroses merely is a lesion in the physical organization, and that this excitability may break out into insanity, or may break forth into epilepsy or neuralgia. He says we meet with neuralgia occurring from time to time without cause; in such we may predicate the past existence of insanity in the family almost as surely as though such were born insane. The only solution is, that the law of diseased organism strives to induce health in individuals with malign bodily conditions. If it were not for this law there would be no hope for our race. The tendency downward would accumulate with fearful rapidity. Dr. Holmes says there is something fearful in the fact that mental characteristics are transmitted, even in the line of criminal propensity.

CLASSIFICATIONS OF INSANITY.

METAPHYSICAL—

1. The intellect.
 - a. Incomplete development—idiocy, imbecility, etc.
 - b. Disease after development.
2. Feelings and moral sentiments.
 - a. Incomplete development—moral imbecility, abnormal but not pathological. Seen in chronic tramps and hardened criminals.
 - b. Invasion of diseases after development—Moral insanity, melancholia, abnormal exaltation in respect to the emotions.
3. The will, propensities, instincts, desires.
 - a. General mania.
 - b. Partial manifestations—such as seen in homicidal mania, and suicidal mania, and Dypsomania.

Clouston, in his new book, adopts the following synonyms:—Melancholia, he calls psychalgia; mania; psyclampisia; circular insanity, psycho-rythm; dementia; pycno-paresis; mental stupor; psychoma; defective inhibition; psycho-keusia; general insane diathesis, psycho-neuroses. Our own classification for such will be mania,—acute, chronic, recurrent. Melancholia,—acute and chronic. Dementia,—primary and secondary. Amentia,—idiocy and imbecility.

All classifications are of necessity defective, and some are altogether complex. The metaphysical distinctions are used in jurisprudence, hence it is best to use them as you will be asked to give medical testimony along these lines. Many authors have a mania for coining new words in which is not wisdom, and making divisions of the different forms of insanity, which are largely apocrophal when put to a practical test in the wards of an asylum.

CLASSIFICATION AS TO CAUSES--

Different classifications of insanity have been made. 1st. The different forms of mania, as pyro, mono, homo, homicidal and suicidal. 2nd. We have melancholia, and its forms. 3rd. Dementia, which may be primary or secondary.

PREDISPOSING CAUSES OF INSANITY—

1. General feeble health.
2. Emotion after the death of friends.
3. Drunken parents.
4. Idiopathic disease of the brain in embryo.
5. Risks of birth.
 - a* Compression of the cranial bones in labour.
 - b* Protracted labor.
 - c* Using of instruments injudiciously.
 - d* Constriction of the cord round the child's neck *in utero*.
 - e* Failure in attempts to produce abortion.
 - f* Anything that effects the mother's health.
6. Derangement in the blood supply of the brain *in utero*.

7. Convulsions of dentition.
8. Sexual excesses.
9. Emotion and excitement of any kind.
10. Pregnancy, parturition and lactation.
11. Old age.
12. Pure consanguinity.
13. Epilepsy.
14. Convulsions during gestation.
15. Any nervous affection.

CAUSES OF INSANITY AND GENERAL PERCENTAGES.

1. Domestic troubles, grief, etc., 14 per cent.
2. Intemperance. I have looked up the cases. If the statement of friends is reliable, $9\frac{1}{2}$ per cent. are in the asylum from drink. One person in every ten becomes insane through drink. In the United States I find about 15 per cent. are committed through drink. On this continent there is less drinking than in any other part of Christendom.
3. There is less consumption of intoxicating liquors, and, I think we would have less drunkenness if it were not for the large number of emigrants who come here from the other side of the Atlantic. Edinburg, Paris and London are full of drunkenness. In Great Britain, the number of insane from drink is 16 per cent.; in Paris, 12 per cent. No man in health needs liquor. He is better without it. In disease it has its place, and an important one.
3. Epilepsy, 6 per cent.
4. Affections of the head and spine, including surgical injury, as blows on the head, apoplexy, paralysis, etc., and cerebritis, 8 per cent.
5. Uterine disorders, about 6 per cent.
6. Religious anxiety and excitement. In many of those who come to the asylum on account of this excitement, the so-called cause was often only a sequel to the insane diathesis. The insanity made itself manifest first, and took the form of this excitement, and so is an effect rather than a cause. Religion, instead of being a cause of insanity,

will tone up the mental characteristics of any individual. The man who has the fear of God before his eyes is all right. 3 to 5 per cent. is the proportion.

7. Disappointed affection : seldom seen in man. Love is an episode in man's life; 'tis woman's whole existence, hence it is a cause in women.

8. Fever and febrile diseases, heart disease, dyspepsia, etc.

9. Intense study. Dr. Clark never knew a man who went insane from too much study, were he otherwise healthy. At the worst, it is rather an occasion than a cause. One writer says 2 to 5 per cent.

10. Excitement of politics and war. Large numbers at these times go insane. During the Franco-Prussian war there were 1,500 more insane in Paris than at any other time of its history. The war of the recent rebellion in the United States had the same effect.

11. Excesses. Several causes may act together as heredity and drink ; lactation and grief ; old age and grief ; trial epochs of life and hereditary. A combination of these gives rise to effects which would not exist if they were not coupled together. Friends fight shy of telling the cause of their friend's insanity. They won't tell about drunkenness, syphilis, and domestic troubles, unless urged strongly to do so.

There are two ways of committing the insane to the asylums of this Province.

1. The ordinary process : A person wishing to commit one who is insane secures papers from the Superintendent. When these papers are made out, the law is fulfilled. (See papers distributed to students by Dr. Clark.) Two certificates of qualified physicians are required.

2. The warrant method : The person supposed to be insane is taken to gaol. He is examined by the gaol surgeon, by an outside medical man, and by the County Judge, who determine his mental condition. Papers are sent to the sheriff, thence to the inspector of asylums, then to the Provincial Secretary, then to the Superintendent of the asylum. The Superintendent, after weighing the matter, sends the papers back to the Provincial Secretary. On these it is

decided whether the patient shall be committed or not. He is then transferred from the gaol to the asylum. This method is clumsy and absurd. In the first way, a man may be admitted in a day or two under ordinary process; in the second, weeks often elapse before the unfortunate patient is admitted; and the early symptoms of the disease, which are most important to know, escape detection, or the disease in the meantime assumes a chronic form.

In form A. we have merely a history of the case. This enables the Superintendent to tell whether the patient is probably fit for the asylum or not. If the Superintendent is prepared to receive the patient, he issues two certificates of insanity, which empower to admit the patient. If the patient is not brought in within three months after the papers are made out, they become invalid. The blanks must be filled fully and correctly. It is well to remember that children, idiots, paralytics and imbeciles are not admitted.

LOCALIZATION—

In opening this lecture Dr. Clark cited quotations from various articles which he had written, which went to show that the basal ganglia were really the centres of consciousness. These were the places in which function was determined, while the hemispheres were simply repositories of power. This was opposed to the cerebral localization theory of Ferrier. Dr. Clark contended for the other view for various reasons and was supported by eminent European pathologists. The hemispheres, he showed, or the cerebellum, might be removed without loss of life. Such could not be done with the basal ganglia, without danger. They make connections with every part of the body. Experiments not only prove this, but also that centres of nutrition are found in the spine and spinal ganglia. Charcroux supported this view, in opposition to Ferrier's localization theory, and says, in speaking of the lenticular nucleus and corpus striatum: "These gray nuclei are possibly so many centres endowed with distinct properties and functions. Schin, of Florence, in

speaking of the motor centres in human and comparative pathology has shown that motor centres do not extend beyond the base of the brain.

After great and prolonged mental exercise, the brain is enfeebled because of exhaustion, and it may be assumed that the brain is truly incapacitated from further function. The great increase of phosphates in the urine of the insane shows disintegration of the nerve tissue. With a microscope one could not succeed in discovering any difference in the nerve substance of the exhausted brain of a sane man and the brain of one after rest ; yet we all feel the contrast between the two states. It is astonishing how much brain disease there may be without mental disturbance—tumours, abscesses and cysts even, found in P.M.'s. of the sane. Any morbid condition which goes on gradually will not produce mental disturbances so much as sudden invasion. Therefore, I say, to experiment on animals with a lower brain organization than man, and tabulate any results flowing from such experiments, are not sufficient proof of what the functional manifestations would be in the slow progress of disease. Hence vivisection is weak in its inductive methods in that particular, if in no other.

The organ accommodates itself to any new conditions. New tissue may be formed, and yet we find no insanity. Sudden shock to a powerful man may produce instant death, as lightning would. But in neither one case nor the other may there be any change discovered. Carbonic acid kills, but beyond blood congestion it shows no diseased sign. Death by lightning causes brain changes to take place, but there may be no physical evidence of them. We know not what future investigators may do in this direction.

It is interesting to note in this connection how disease adheres to distinct structures. Intercostal muscles are not affected in pleurisy. In pericarditis the heart muscle remains unaffected. So in effusion of the pia mater we seldom see this effusion extending in to the brain substance. These are not fixed conditions, but the exceptions proves the rule. A blow on head, sunstroke, shock from lightning, may cause inflammation to set up, with pain

and fever. This lasts for a few days and then subsides. Did it extend, death would ensue. Delirium sets in during this time, and after three or four weeks, recovery. Then some definite time afterwards the patient becomes sleepless, short tempered, suspicious, restless, and unfit for work. Possibly hallucinations set in, and acute mania; too often such cases end in death from the following causes:

1. Deterioration of the brain tissue, secondary to inflammatory action.
2. From mere nervous exhaustion, or
3. Sudden or gradual failure of the heart's action.

The result of inflammation may be that the product of that process may mean thickening, clots, passive congestion and pressure on the surface of the brain. The inflammatory products are the immediate cause of mental disturbance.

Inflammation is seldom the primary cause of insanity. It may be secondary in this way. In the common way, inflammations at first increase the bulk of the organ affected. Afterwards the inflammatory products shrink on the vessels and cut off, to some extent, the blood supply, and the result is atrophy and density.

Inflammation of Glisson's capsule is followed by atrophy of the liver. Is it not possible that the same process takes place as a secondary result of cerebritis?

Now we have (1) Atrophy of the brain from deficient food, (2) Derangements of connection between the nerves and vascular system, causing disease of the minute cerebral vessels, in the form of fatty or earthy decay in the coats of the vessels; (3) Molecular change in some way by blows or violent concussions; (4) Albuminous matter or serum fluid may be effused into the structure of the brain, and thereby separate vessels, tubules and cells; (5) Want of sleep, especially from emotion, trouble, distress, or nerve exhaustion; (6) Atrophy of old age, when nutrition and repair begin to fail to keep pace with the decay.

At about sixty years of age the coats of the arteries often thicken. Not only may there be atrophy, but the shrinking may not increase the Sp. Gr.; or it may. We may have the same substance in smaller than normal compass, and in this

way mobility partially destroyed. We have also Hypertrophies which are made up of adventitious tissue ; amyloid crystals or colloid crystals or calcareous and fatty granules, all evidence of retrograde metamorphosis. These morbid products are formed in two ways : (1) by malnutrition—backward nutrition process ; and as a result of this malnutrition we have vitality lessened and low assimilation. As a result of that we have present depreciated elements of a low order.

(2) The elements may have been formed in a normal way, but deteriorate in vitality and tone. We have then brain disease in the following forms :

- a. Inflammatory degeneration.
- b. Chronic hyperæmia.
- c. Fatty degeneration.
- d. Amyloid degeneration.
- e. Pigmentary degeneration, most commonly met with in the ganglionic centres.

Now the blood supply is an important factor in insanity. A deficient quantity and quality act on the nerve centres, and this condition reacts on the vessels. Hence it is so many brain troubles are caused by eccentric influences. Such brain troubles are secondary, not primary. The heart is one of the most potent factors of causation. Heart troubles of various kinds are very common among the insane. Especially is this true among the melancholiacs and those with chronic dementia. We know how the circulation is affected by fatty degeneration of the heart. That means loss of tone in the muscle. This means feeble blood flow. We know how it is affected by the affections of the aortic valves. Then in aortic aneurisms it means a slow flow from the heart, seen in the weak pulse, cold extremities, and hypertrophy of the left ventricle. In your practice you will often be called on to treat those afflicted with puerperal mania. The brain trouble is secondary; the primary cause is uterine. This malign influence on the brain is through sympathetic system of nerves. This condition is a good illustration of outside influences affecting in a secondary way the brain.

MANIA.

This may be defined as a morbid mental exaltation or delirium, usually accompanied by insane delusions, always by complete change in the habits and modes of life, mental and bodily, and by loss of power and self-control, sometimes by unconsciousness and loss of memory of passing events, and almost always by outward muscular excitement. All these show a diseased activity of brain convolutions. And we must distinguish these from natural exaltation and those produced by drugs, such as alcohol, opium, and the fevers.

Maniac comes from mania. It is applied to all insane. Very few of the insane are maniacs. There are two clinical forms of mania : (1) Sthenic ; (2) Asthenic. Mania has a stage of incubation. Excitement may be noticed at first in some ; others break out without warning. A large number at first show signs of low spiritedness. It is sometimes introduced by stupor. Either of these two conditions is often followed by sudden outbursts of violence. An old Latin writer called anger, or a short madness, "a raving madness." (Horace.) This is wrong, because there is no pathological condition in an angry man. Mania has its beginning in the disordered emotions, such as love, hatred anger, grief, etc. Sudden impulses are factors in these violent manifestations of mind. Mania overturns the moral nature and perverts the intellect. A person thus afflicted has no respect for himself or others, has violent outbursts of passion, often makes dangerous attacks on persons, uses loud invectives, foul language, and stamps the feet, etc. The whole appearance would tell of the emotional storm raging in the brain. In a typical case may be seen the muscles on the stretch ; contracted brow of an angry man ; bloodshot and brilliant eyes ; erect and contemptuous toss of the head ; congestion of the head and face ; no regard to cleanliness, faeces and urine being passed in bed ; the patient may swallow them ; no sense of decency ; full of frolic and excitement. Such are lost to all sense of shame on the one hand, and lost to all fears of the consequences on the other ; will use fearful language ; they run and shout and scream

in the most outrageous manner. No wonder the ancients thought they were possessed of devils. It is very remarkable that the physical organization does not suffer more than it does. The pulse may often run up to 120; the average is 90. There is little change in the pupil. The peculiar odor is very diagnostic. Strange to say the appetite is good and there is very little thirst. In many cases, as a rule, the bodily health is not such as it should be. The condition of the skin and liver show signs of derangement. The most prominent symptom is insomnia, some complain of the abdominal organs, others of strange sensations in the epigastrium and imagine that there is some animal there; others have a great heat in the head. The senses are perverted.

If it does not terminate fatally or in recovery, it will assume the chronic form and become intermittent. These pronounced symptoms are ameliorated in some degree in chronic cases, only to return again in circular insanity in those afflicted with recurrent insanity. Acute mania often terminates in melancholia or dementia. If mania continue, the patient gets thinner; and if mania suddenly subsides, death may occur. If such are excited night and day continuously and the mania suddenly subsides, death occurs with startling suddenness.

ASTHENIC MANIA—

Symptoms:—Feeble pulse and frequent; tongue pale and flabby, and indented at the edges; the conjunctive watery and pale, or vascular, but not very bright as in sthenic mania; indications of exhaustion and low vitality. This form may come accompanied by fever, and the patient may have typhomania; brown tongue, feeble wiry pulse, diarrhoea, clammy sweat, intense thirst, glittering eye and muttering delirium are seen in cases of typhoid approaching death, hence the term *typhomania* for this condition. When we see these symptoms we know that death is not far away. As a rule, in a mild form of sthenic mania we find the presence of some strong emotional characteristics, such as pride, hatred or anger.

The imprint of these is on the countenance in the facial lines, and makes the young look old even though they are comparatively youthful. In acute mania the bowels are generally constipated ; the urine contains phosphates. Patients suffer from protracted loss of sleep. Hallucinations of sight and hearing are far more frequent in this than any other form of insanity.

Five principles in acute mania may be laid down :

1. It may affect the whole mentality of the person, namely, the intellect, passions, emotions and desires.
2. It may be a permanent manifestation of disease without affecting mentality in its entirety.
3. It may be a symptom of a more grave disease, as in syphilitic or paralytic insanity.
4. It may be a precursor, or sequel, to such an affection as apoplexy.
5. It may be general mania, and take the place of some general neuroses, such as hysteria, neurasthenia, or such like.

Now, acute mania is a form of insanity which is often simulated by impostors. It is easily detected. No impostor can put on the restless eye, ceaseless movements, disjointed ideas and rapid utterance of mania, continuously night and day. His endurance will give out. The skin is dry and harsh, or cool and clammy, in acute mania. The malingerer who lashes himself into fury will be hot and sweating. Maniacs will pass days and weeks with little or no sleep ; no impostor can do that, nor can he keep up excitement long at a time. An impostor, not well skilled in insanity, will mix things up. He is a poor actor, and if hints are given of the inconsistencies in his acts, it is astonishing how the bait is swallowed. No insane man will care about hints or advice. The impostor does best in simulating chronic mania, but he overshoots the mark. He thinks a lunatic must run and shout and rave about everything. He pretends he has no memory. The maniac is consistent in all his acts with his condition, and is typical, in a general way, with all others similarly attacked ; the impostor gives a medley of symptoms, through ignorance of what the condition of mania means.

DEMENTIA.

This is mental decay based on physical degeneration. It must not be confounded with imbecility, which simply means a physiological defect. Dementia is an acquired enfeeblement not congenital, while imbecility is an original weakness usually based on congenitally feeble brain power or infantile arrest of development. This term should always be applied to permanent mental failure, and not to any temporary loss of mentality of an evanescent nature. It is consequent on organic lesion of the brain, and should be distinguished from the dementia of old age, which is only a process of natural decay, and as a consequence cannot go under the head of insanity. I don't know how many old men have been certified to as insane, when there was nothing under the sun wrong with them but dotage of old age. I often have difficulty in getting them away. Some people are so heartless, they would rather have their fathers and mothers here than anywhere else; when they, the parents, have often provided homes for the children who commit them, to get them out of their way. Dementia affects every mental faculty and is patent in the intellect and the manners and dispositions and temper and habits and general character of the individual. We see in typical cases a change of physiognomy. The countenance becomes expressionless. Often the eyes have a vacant stare and there is a silly smile on the face, or more often meaningless apathy. Of course there are all grades of this condition. In dementia there is partial or complete depreciation, not a mere turning aside of certain mental activity, but deprivation of mind. The perceptive faculty is at a low ebb. In examining such cases it will be found there is more or less impairment of

- (1) Attention.
- (2) Memory.
- (3) Comparison.

These three points are the distinctive characteristics which in English law apply to imbeciles or idiots. If they cannot do a simple sum in addition they are held to be

idiots. In summing up addition you have to know what four means, and that four and four mean eight. So you must have attention. Such must have a knowledge of what a unit means, and memory to carry in the mind figures from one term to the other, and also comparison in carrying tens from one column to another. When examples of dementia are seen they can never be forgotten—the stupor, the relaxation of facial muscles, the altered appearance of the countenance, the listlessness, the hanging of the head, and dangling of the arms, and lolling about with heads down, and sometimes eyes raised in a stupid way. Some of those who are lowest in mentality would burn before they would move from a fire. I have seen them let flies settle on their eyes without winking. The saliva and secretions from the nose and eyes are unheeded. Urine and faeces pass without notice. Of his own accord such a person in the lowest condition would not eat or drink or avoid discomfort. This is extreme, for you know many of them know what the dinner bell means. They have puffy hands and feet, skin purple, and skin and hair harsh and dry. The emotional is affected, but not to the degree that it might be. Sexual instincts are weakened and often destroyed. Sometimes a mild mania is present. Primary dementia of a mild form is difficult to diagnose. Loss of memory is the most marked condition. The most frequent causes of the disease are hereditary tendency, shocks of apoplexy, injury to the head, exaltations of the emotions and passions, paralysis, fever, etc. If dementia can be traced to such causes, then is it of a secondary character. In such cases the dementia must follow some primary lesion, as a secondary result.

Now, secondary dementia means that form of mental enfeeblement that follows an acute form of insanity. It is more complex than the primary, and may be mixed up with melancholia (as in circular insanity), mania, and delusions. In this form the emotions are more pronounced and more fixed. It is in this form that we find markedly this stupified insane expression. It is said "the heart of man changeth his countenance"; so the great storms of fear, worry, and anger leave their traces in the sad wrecks of

insane humanity. The hideous countenances of olden times was due to the barbarous treatment of the insane in the old asylums of years ago. Because of kindness and gentle treatment we have changed the countenance of demented in all the asylums of Christendom.

Cruel treatment makes the insane repulsive, malignant, and ferocious, as it always does ; even the lower animals appreciate kindness and resent injury. The worst cases of insane appreciate kindness. In pronounced cases the points I have mentioned will enable you to detect dementia.

The aphorism I gave you is applicable here : Is the man himself ? Measure him by his past record and personal history. Dementia may be the result of any other form of insanity ; hence its causes are many. Mania, melancholia, general paralysis, monomania, if chronic, usually end in dementia. If they do, prognosis is very unfavourable, but not hopeless. The recurrence of mania may shock the system into recovery, and I have seen an attack of some inflammatory kind, or a fever, do the same thing. Dementia may be divided into five kinds.

1. Secondary dementia ; the consequence of other antecedent disease.
2. Primary dementia ; the result of deficient brain development, such as congenital imbecility, idiocy, amentia, and cretinism.
3. Senile dementia ; that of old age.
4. Organic dementia ; result of gross or organic disease.
5. Alcoholic dementia ; following continued and undue use of spirits until childishness supervene. Such a man becomes childish under the influence of opium, etc. After a while this childishness remains after the direct toxic effects are removed. Although it may be laid down as a rule that it is a sequel to other forms of insanity or other troubles, yet sometimes it comes on as such without any of these initial causes preceding. The first step is usually brain depreciation, followed by mental weakness. I have more hope for a person with an educated brain than a person with an ignorant brain. There is more rebound in the brain of an educated individual than you find in those who

are ignorant ; and dementia is more likely to follow an acute attack of insanity among the ignorant classes than among those who are educated, just as you find there is more elasticity in steel than in iron.

HOMICIDAL MANIA—

This is the most deplorable of all forms of mental alienation. Some have been sent to us by courts, having been held to be not responsible on account of insanity. Others have been sent as insane without formal trial. The insane with homicidal impulses may be divided into six classes, which indicate different mental conditions.

1. Those who take life in paroxysm of insane passion or fury—remember, not natural passion or fury.

2. Those who commit homicide from compulsion, or are deceived by their hallucinations, delusions—namely, disordered imaginations.

3. Those who kill indiscriminately. A man may kill believing some one is about to injure him ; or, it may be, thinking that it is best for himself to kill rather than be killed. Some years ago a man going up Yonge Street saw a butcher sharpening his knife, and he got it into his mind that that man was sharpening the knife to kill him. He thought that if he did not kill the butcher the butcher would kill him. Although he didn't know the butcher, he went in and stabbed him, but did not kill him, the knife having been thrown off by the ribs ; stabbed him the second time and cut the walls of his chest severely. He was here for years. He told me when he recovered he was as sure as he lived that the man was about to kill him. He has been for twelve years running an orange grove in Southern California near Los Angeles, sane, and a quiet citizen.

4. Discriminating homicide, and apparently from the mere love of taking life, being without delusion, yet, with a diseased propensity and intense desire to destroy others, against which act neither reason nor conscience remonstrates.

5. Those who kill without any apparent motive from sudden impulse, but of which they are unconscious, and who retain no recollection of anything which prompted them to

the act. Take a case like Harvey, of Guelph, an affectionate man, educated, very fond of his family, wife and children ; a man with no intemperate habits and whose whole record was that of a well behaved man. He gets mixed up with the books of a firm. Sometimes mistakes are made against himself, and sometimes against the firm ; consequently, arrested for embezzlement. Being proud and jealous of his character, the charge unstrings his mind. He goes home. He takes a pistol, he kills his wife and all the children in the house ; he goes out, fastens the door and goes in search of the best way to Galt, from there to Harrisburg, from there to Hamilton ; then goes to Toronto with the determination to kill his son and then himself. Asks his son to go and sleep with him. The tragedy got out. He was arrested. He longed for death, because he wished to die. No malice aforethought ; no object under the sun in any shape for doing these homicidal acts. Such men as a rule are epileptics, possibly subject to nocturnal or larvated epilepsy. This possible condition was never enquired into, strange to say. This is called masked epilepsy by continental writers. Such men, sooner or later, manifest homicidal or suicidal tendency, or both. The reverend gentleman who stayed with Harvey the night before his execution said he had convulsive movements for a few moments at a time, followed by delusions and hallucinations ; and had he had time to have telegraphed to Ottawa, he would have telegraphed that he (Harvey) was insane. No one blames the law under the circumstances. As a matter of fact, many are executed who are supposed to be guilty of "malice aforethought" when they are rather victims of physical disease. Harvey, no doubt, remembered the tragedy as an ugly dream or nightmare. The impulse consequent on the brain cyclone ended in that way, as it so often does. The newspapers record numbers of parallel cases.

6. Those disposed to commit some indefinite crime, and without motive, from the irresistible impulse of which they are conscious and against which reason often remonstrates. The inhibitory power is lost.

7. Those who kill from imitation or from an insane love of notoriety. As a rule, this class is composed of imbeciles.

EPILEPTIC INSANITY.

A man may be the subject of epilepsy, and yet not insane—at least he may give no evidence of insanity. I have no doubt, in my own mind, that we have many instances of homicide in which epilepsy has been the cause. In the study of epilepsy, in connection with insanity, we have not so much to do with the fits as with the mental manifestations. The irascibility of the epileptic, his blind fury and his uncontrollable passion, are among the first signs. Eccentric acts may precede this, but may not receive much attention. Many epileptics have exaltation on religious ideas; they are very devotional, and yet may kill others. Mania, from epilepsy, has this striking peculiarity, that its development is most decided after one or more convulsions. How long a person may be subject to epilepsy before any symptoms of mental alienation is noticed, is a matter which has not received the attention it ought. The forms which the mental disorder assumes are various. In some there would be simply restlessness, confusion of mind, and inability to attend to anything, from complete stupidity. In others, there is a dogged sullenness; in others, the excitement will burst forth perfectly blind and furious, impelling to acts of destruction, regardless of everybody. The person may attack anyone who may approach him. He has an expression of countenance as if he were looking at some fearful sight. The gesticulations and movements of the body correspond to the excitement of the mind. Last week one of the graduates of one of our colleges came from a long distance to tell me how he felt. In the morning he was irritable, short-tempered, the least thing putting him about, and he had not control over himself which he used to have. These states of mind came on him intermittently. He said he never had any fits of any kind, never woke in the morning with bitten lips, or have evidence of nocturnal fits. While we were talking he took a violent fit, immediately

screaming, and went into convulsions. It was one hour and a half before he could go away. This was the first intimation of fits that he had had in the daytime, but no doubt they had been at first of the larvated variety.

The attack will last from a few hours to a few days. The individual sinks into a heavy sleep afterward, which may last many hours. He arises with the excitement gone, but a feeling of general debility. The peculiar ideas, action and manners noticed in the first attack will almost invariably be found to characterize all subsequent attacks in the same order, though not always in the same degree. These often extend to the premonitory symptoms as well, so that by careful watching and using precautionary medical means, the violence of the attack may be mitigated. Epilepsy is a favored form for imitation by imposters. But they cannot deceive the practical eye. Some of these epileptics have an aura, others utter a loud cry and piercing sound, and many fall forwards. Watson tells us of a gentleman in England, an epileptic, who saw a woman with a red cloak on coming towards him, and who struck him on the head. In this way he could get away from the fire or any object against which he might fall and hurt himself. Many fall forwards, striking the forehead or some part of the face. Others will stagger a moment, and then fall on one side—mostly to the right. Others may quietly settle down on the floor; the variations will be as great as the individuals effected. There will be deadly palor of the face and lips, and for a few moments after the fall there will be no convulsive movements. Then the muscles on one side of the face, and corresponding side of the body, will begin to work, and the contortions will be frightful, with suffusion of the face, distension of the blood vessels, closure of the eyelids, peculiar stertorous breathing, and, as the fit progresses, frothing and foaming at the mouth, often mixed with blood. When the patient falls on one side, he usually draws up his knees and turns over on the face. When he turns on the back there may appear a convulsive movement on both sides. The severity of the convulsions will be confined to the muscles on the side opposite to that on which the patient

falls. The limbs quickly straighten out. The same unilateral character of the convulsions will also be noticed when the patient falls on the face or settles down quietly. After continuing for a few moments, these frightful contortions subside. The patient will draw a big sigh, make efforts to take a sitting posture, fall back again, and lie in a dull stupid state for some time. If the eye-lids be opened during the convulsion, it will be noticed that the pupils are widely dilated and insensible to light. If the hands are noticed, the thumbs will be seen to be bent on themselves, and bent in a peculiar manner rigidly into the palms, and the fingers folded over them. On the side of the most convulsions there will be more or less spasmodic action of the thumbs during the convulsions. The face and body will often be covered with profuse perspiration. This malingners cannot imitate. There is complete unconsciousness of all surrounding objects and impressions during the attack. Sometimes, in place of the convulsions, the individual will manifest uneasy temper periodically, and can give no reason for it. The masked epilepsy (*petit mal*), is not so pronounced as the above, but is more fatal to mental integrity. It often exists for years before the patient really suspects the true nature of the malady. The severer forms do not come on as often as the milder ones. The brain can thus resume its tone. But as the constant dropping wears the stone, so the *petit mal* effects the mind. This form is thus characterized by sudden consciousness, lasting, it may be, for an instant. It is accompanied by slight palsy of the face, dilated pupils, etc. These people are not aware of this gap in their mental continuity. It often occurs at night, and on that account is difficult of detection. It may be developed into larvated epilepsy, and may end in hopeless insanity; we can only hope to mitigate the sad lot of such.

DIFFERENTIAL DIAGNOSIS—

It is important to bear in mind the difference between hysterical and epileptic fits. In epilepsy attacks are as a rule sudden; in hysteria they are often gradual. In epilepsy the patient utters a scream at the onset of the attack;

in hysteria screams occur during the course of the attack. In epilepsy the convulsions are characterized by rigidity, followed by jerky movements ; in hysteria there is a sort of spasmodic struggling, and generally throwing about of the head and limbs. In epilepsy there is usually biting of the tongue ; in hysteria there may be biting of the lips and hands, but more often an attempt to bite other people. In epilepsy micturition often occurs during the attack ; in hysteria it very rarely ever occurs. In epilepsy the patient never talks ; in hysteria talking is frequent. In epilepsy the contortions last but a few minutes ; in hysteria they continue from one-half to several hours. These distinguished parallelisms of these kindred diseases are of paramount importance in general practice. Dr. Strong, of Cleveland, pointed out that an examination of the pupils shows an alternation of dilatation and contraction of the iris, persisting for a minute after the patient returns to consciousness. The epileptic pupil is also conspicuous during the paroxysms of mania during these moments when the patient is made stupid by it for a few seconds, even in the milder forms. The eyes are open and staring. It is sometimes called psychic epilepsy, or mind epilepsy. This pupil dilatation, furnishes to the most inexperienced a ready means of diagnosis. No imposter can produce dilatation and contraction of the iris. I have never seen this test fail ; it is a point of especial value in obscure cases of epilepsy.

EPILEPSY OF THE MIND—

Patients who suffer from this, show sudden disturbances of their mental equilibrium, which is of short duration, in which they manifest strange conduct, especially temporary loss of memory. They take peculiar freaks and are very eccentric, although not immoral or criminal. This morbid condition has been called epilepsy of the mind. Such often leave home and come to themselves as vagrants and wanderers, not knowing how they came where they find themselves. When they come to themselves they remember nothing about their wanderings, although they will ask for meals and lodgings in a rational way, as if they were possessed of a double consciousness.

Another form of epilepsy is seen in those afflicted with alcoholism, the cause of it being that the two conditions usually co-exist. In these cases we have the hereditary influence at work as a rule. The attacks are usually accompanied by some form of mania or suicidal propensity and often with violent convulsions. The attacks are characterized by wildness and cruelty, with absence of all motive, absence of all premeditative, of all desire to conceal, and usually with all loss of remembrance.

Arterial spasm, in the pons varolii, is probably the cause of the epileptic phenomena, including clonic convulsions. The pathological appearances are, of course, the effects of the attack.

It is not to be forgotten that epilepsy and hysteria may co-exist in the same individual. They may cohabit and not be dependent on one another. They may antedate one another, or be synchronous and yet remain separate and distinct manifestations.

2. Then we may have epilepsy as a permanent disease accompanied by hysterical symptoms which may not be very distinct, simply hystero-epilepsy.

3. We may have hysteria permanent feature, accompanied by a mild and a vague form of masked epilepsy.

4. We often find the principal features of both so mixed up in their order, in their groupings, in their frequency, and comparative intensity that it would be difficult to say which was the primary and initial disease. All go under the name of hystero-epilepsy. In true and pronounced epilepsy the fulcrum idea is the fact of unconsciousness for a longer or shorter duration. In the pathology of this disease, we find anaemia of the blood vessels, often followed by passive congestion. Epilepsy may be associated with other lesions—tumours, abscesses, tuberculous membranes, thickening of the membranes, or adherent inner table of the skull. Syphilis may be a cause. It may result from blows or thickening from alcoholism. Until recently it was not known what the pathological condition in epilepsy was, being a disease so sudden in its invasion and so slow in its effect on the health. The patients often live to a good old age. In experiments

on criminals, it is said that the irritation in the cortex spreads to the medulla. In all cases there was spasm of the arteries and reduction of their calibre, followed by dilatation. This points to some abnormal change in the sympathetic system of nerves which supplies the arterial coats with nerve stimulation. Severe hemorrhage will produce epilepsy. So will a watery condition of the blood, as we get in albuminuria from morbus Brightii, or in pregnant women. Many men who are severe smokers, whose systems are saturated with nicotine, and who drop dead, are often victims of attacks like epilepsy. Among the predisposing cases may be classified sex, heredity and age. Males exceed females in frequency of attacks by about 12 per cent. The influence of inheritance is very great. Statistics show that about 35 per cent. may be traced to disease among near relatives. The influence of age is marked. About 76 per cent. of the cases occur before 30, about 30 per cent. occur before 10. The excess of the females over males in early life is not noticeable. In many cases the so-called exciting cause is only secondary. Epilepsy is not a single disease. It has many concomitants. It has not a succession of stages, a rise, and progress and culmination, as in specific maladies. It is unlike any other disease. When it goes on in early life it makes a child either an idiot with undeveloped mental faculties, or leaves it imbecile. If such grow up they are irritable, morose and malicious, or they become hopeless, helpless and harmless, with only the instincts of the brute creation. In medico-legal cases, it is well to keep this distinction in mind. In the ordinary epilepsy, where there is no insanity, we have reasonable and lucid intervals. Under this aspect of the question we have :

1. Those who have no mental defect except during the fit, when they are helpless.
2. The class who show mental defect shortly before and after a fit. These may often be violent—dangerous.
3. The class that have prolonged mental alienation of a serious nature, both before and after a fit.
4. Those who are insane at all times, but seem excited and dangerous before and after a fit.

IMPULSIVE INSANITY.

MANIA TRANSITORIA—

This is sometimes called temporary insanity. It has been used in the United States Court of Justice for many years to shield criminals from receiving the just deserts of their crimes. The professor instanced noteworthy cases where men had, with "malice aforethought," committed homicide. The plea of temporary insanity was set up, and they were allowed to go free. By keeping in mind the fact that insanity is a pathological condition, that it never is temporary, one will not be misled. It may begin suddenly, but never ends suddenly. Diseases always show some evidence of their presence. But this does not. The believers in it must possess some quasi-divine insight into the mind to discover any abnormality. The victim of it has always been sane; suddenly, under provocation, he kills a man and then lapses back into a sane condition again. This is the history of it. There can be no trouble in the brain, because there is no co-ordination. The plea for there being such a form of insanity is absurd in the highest degree. This lightning form always waits for its opportunity, assaults its victims at the most opportune time; has a substratum of revenge as a motive, and has not the purposeless object of an insane homicide. Remember that brain disease needs time to incubate, to progress and to terminate.

PUERPERAL INSANITY.

This form of insanity occurs in one out of every 400 child-bearing women. It cannot be classed as a distinct form in its manifestations. The difference lies in the cause rather than in the symptoms. The exciting cause is in the disturbance of the sympathetic nerve, from uterine excitement, and only secondarily in the brain. You may be asked in giving evidence, if you can trace the pathological conditions in the brain in some forms of insanity. It is well for you to be guarded by stating that there may be disease in the molecules of the brain beyond the reach of scalpel or

microscope, and in this relation you can state that in a large number of cases of insanity the brain is often secondarily affected, the primary cause being outside the brain; as for instance, from dyspepsia, heart disease, uterine troubles, etc. Puerperal insanity may assume the form of mania, melancholia or dementia, or these may follow one another in succession. The case may show all in its progress towards recovery or towards chronicity. We must not confound puerperal mania with puerperal fever and its delirium. The delirium of fever is symptomatically altogether different. The muttering inanities of fever have few features in common with the conscious and with the intellectual lesions of puerperal mania. Puerperal insanity may manifest itself at three periods in a woman's life :

1. Insanity during pregnancy.
2. Insanity of parturition.
3. Insanity occurring during lactation, including the period of weaning.

It is sometimes the case that in the first class the insanity may pass away at child-birth, the gravid uterus seeming to be the exciting cause. Those thus effected are usually melancholy and delusional. Some physicians recommend induction of premature labor, First, to shorten the attack; Second, to, if possible, prevent the production of idiocy in the child, if it should live. There is no reason to believe that the mother would be benefited in any way by such a radical measure, as many miscarriages through maniacal excitement have shown no improvement because of this act. The morality of such a course, based on hypothetical results, is rightly doubted. In the latter stage of labor there is often temporary delirium and a short period of delusion, that passes away at delivery. This is not insanity, as it is evanescent. Hereditary predisposition is an important factor. Anxiety, worry, grief, fear, etc., are often important factors in its production, when added to a parturient condition.

INSANITY OF LACTATION--

This is usually brought on by weakness engendered from nursing a child, added to an only partial recovered condi-

tion from child-bearing. In primiparous cases, the danger is great, as is the case late in life. Six weeks after confinement is the limit given to this form, but it may occur several weeks after this time. Three months is nearer the mark. The great majority of such cases become insane in ten days or two weeks. I make two classes : First, where the case is simply sympathetic. In this class the uterus and appendages seem to be normal ; the cause seems to be a shock to the nerve centres which are in an unstable condition and ready for an outbreak. Second, the septic. In this class are not only loss of blood, exhaustion, mental and bodily excitement ; but septic material from normal decomposition finding its way into the blood vessels, enters the blood and poisons the brain. Some others have a class they call phrenitic, being inflammation of the brain membrane. Then an inflammation of the brain supervenes, so it is said, but I never saw a case of it. It is then encephalitis. In this attack we have not mania simply, but the delirium of fever as might be expected in an inflammatory condition.

PHTHISICAL INSANITY—

That is mania following lung disease. Tubercular lung disease is common. Consumption has usually accompanying it mania or melancholia, ending in death by lung disease. When mania intervenes, all the most prominent symptoms disappear, but return again after the maniacal attack. Sometimes mania and consumption are contemporaneous, rather than dependent upon one another, but as a rule the latter succeeds the former. Very often the intellect improves before death. But the majority go on to dementia, if the disease should linger. The patients thus afflicted usually die in from three to six years from invasion. About one-fourth die within twelve months. In this latent phthisis there is seldom cough or expectoration in the insane. The hectic fever, symptomatic diarrhoea, glittering eye, night sweats, and dyspnoea may be present. The lung may be filled with miliary tubercles, but not broken down at all.

SYPHILITIC INSANITY—

Syphilis is a greater exciter to insanity than we are aware of. Effects creep out months or years after the attack commences. Symptoms are, first, mental impairment, or mind failure, often associated with weakness and loss of moral sense. Early outbreaks of maniacal symptoms may ensue, also some depression, or fear, or undue hilarity, or merriment. Second. Motor symptoms. These are more common in the form of hemiplegia, palsy of cranial nerves, motor paralysis or in co-ordination of the wide spread kind, and impaired condition of visceral organs. Some say that progressive paresis is always due to syphilis. Dr. Mickle is inclined to think there is a foundation of syphilis in all cases. His asylum being for soldiers and sailors, I think he is not in a position to tabulate all facts connected with general paralysis, not having in his charge all classes. Some of them thus afflicted have paralysis agitans. Third. The clinical features are intense nocturnal hemi-cranial pain. Sometimes the very contrary condition exists in anaesthesia. Other symptoms are affections of special senses, blindness, unilateral defects, and hallucinations. Many of these are common to all attacks, but, if there are persistent headaches, giddiness, epileptoid attacks, and temporary disturbances of consciousness, my suspicions are always aroused, especially if followed by unilateral contractions and pains. Look for diseased glands, ulcers of skin, and affections of the mucous membranes. If such a person is anaemic it often takes the form of mild mania. There may be a general breaking down of the mental powers, accompanied by atheroma of the blood vessels. Syphilis is usually accompanied by mania. The mania does not last long. It is followed by melancholia or dementia, or both. It is difficult to trace it if there is no physical evidence presented. The glands or skin may give us a clue. The outbreak is often heralded by epilepsy, etc.

Pathology—

Arteries in the brain are chiefly affected. The change is distinct from atheroma. Atheroma is hypertrophy of the arteries, increase of tissue going on to fatty degener-

ation with calcification. In syphilis it is as if new arteries were formed in the old, and, as a result, occlusion; hence hemiplegia, syncope, and softening. The anterior and middle cerebral arteries are especially affected. The syphilitic condition is seldom found in nerve tissue proper. Fibrous tissue, blood vessels, lymphatics, membrane, or bony coverings, are the primary seat of the disease.

KATATONIA—

This is a form of insanity of a chronic nature. Comes on with melancholy, followed by epileptoid spasms, hallucinations of sight, hearing and derangement of motor or trophic centres. It does not deserve distinct classification, having no characteristic features worthy of a name.

PARANOIA—

Paranoia is another classified form. The Germans call it *verrucktheit*. It is a new name for an old form of disease, and has no distinction in fact. It is a classification based on shifting symptoms. The patient may be delusional, monomaniacal or melancholy. The varied conditions of such can be classified in other forms without coining a new word. The term indicates, according to authors, a condition of primal, nervous and bodily deterioration, in which dominant ideas are prominent egotistic pretences, and fixed.

CONCEALED INSANITY—

Many persons know that insanity is coming on. They feel the cloud coming on them, and fight against its invasion as far as they can. With strong will, the mental stream is stemmed, but, the flood comes with greater impetuosity, because of the checking of its headway. It is distressing to see these forebodings in circular insanity, when a person is struggling against the coming invasion. Naturally, such fear the attack. These apprehensions often precipitate the outbreak. Many people having a predisposition to insanity often precipitate the outbreak by thinking that some time or other they may be afflicted as was their father or mother. Medical men should state that insanity is never bequeathed

per-se. Those without delusions, and who are otherwise sane, may and do check an attack for a time, until some shock or disturbance makes manifest latent disease. Strange to say, we find the insane simulating the insane. The dement or the maniacal will not do it. The melancholia are mentally incapacitated from doing this, but the cunning and delusional lunatic is the one who sometimes does, or from a love of imitation he may do it as a freak, or to get some toothsome viand, etc. It is amusing to see such drop the mask when found out, and resume their abnormal insane state, in which they see no insanity or inconsistency. The assumed is believed in, but the real is denied. They can put on a character for a purpose, but vehemently deny that they are what they seem in another form.

MELANCHOLIA—

Melancholia as a brain disease has as a prominent symptom mental pain. There is an intense feeling of ill-being, loss of self-control, insane delusions, and usually uncontrollable impulse towards suicide. There is no proper capacity left in the more profound cases to follow ordinary avocations; patients care nothing about ordinary affairs of everyday life,—all showing a diseased condition of the highest brain centres. In defining melancholia it is well not to draw the line which includes such states of mind as "lowness of spirits," to which is given the popular phrase of melancholia or hypochondria. These may be only gradations of comparatively healthy conditions. Mere melancholia may have no morbid loss of self-control, and the power of working may not be destroyed. The ordinary interests of life are lessened, but not abolished. Some think it (insane melancholy) is not a distinct mental disease at all, that it is an element in many other forms of insanity. To some extent this is true, but its symptoms are so marked and characteristic that it is well to classify it as a distinct form of insanity. If we keep in mind the three divisions classified as faculties of the mind, that is the emotions, the intellect and the will, we will find that the emotional derangements are among the first premonitory

symptoms. Many have told me that long before they lost control of themselves they felt the mind going. They said they lost their "grip of life" and their interest in it.

1. Mental depression. It may come on suddenly through grief, or fear, or gradually. As a rule, it is very insidious in its approach ; but remember this is distinct from natural despondency, for the latter is common to all humanity. Not to possess mental depression at times would be a suspicious deprivation in any person ; it would be abnormal. We often find melancholia and hilarity alternate. The newspapers are full of accounts of suicidal persons who appeared cheerful immediately before perpetrating the deed. This cheerfulness is not always assumed. It is just such alternation of mental conditions which often show want of mental equilibrium among suicides. The insane melancholiac has a sad list of feelings, viz.:

Feeling of fear, apprehension of coming trouble, dread of supposed impending disaster, without being able to locate in what form it may come ; depression, without cessation, abstraction without cause, forgetfulness, neglect of duty not habitual, loss of natural affection without reason. The latter is seen very strikingly in mothers who have children. When these states are recovered from, natural feeling comes slowly back. They often turn against their best friends. They have religious fears, such as loss of hope, restlessness and want of sleep. Dryden's statement is :

He makes his heart a prey to black despair ;
He eats not, drinks not, sleeps not ;
Has no use of anything,
And if he talks it is but to himself.

Of the alternations of hilarity and melancholy, we have a striking instance in Cowper, who wrote "John Gilpin" two or three days before he attempted suicide. Poe gives us another example, as his "Raven" shows. His "Raven" is a perfect picture of sadness and melancholy. The raven is supposed to represent remorse. Byron was an epileptic, and so that accounts for his intermittent melancholia. In the tragedy of Cain is seen profound melancholia and bitter-

ness with the world of mankind. You remember J. C. Saxe, the humorist, died of melancholia two or three years ago in one of the asylums in the Eastern States. Hugh Miller, the great geologist, who wrote "The Red Sandstone" and "The Footprints of the Creator," was afflicted with melancholia and shot himself with a pistol. Suicides are not always insane—in fact the most of them are sane. When Sampson pulled the house down on the heads of the Philistines, he was not insane. Saul and his armour bearer, after the tragic scenes of Gilboa, committed suicide. Judas committed suicide, returned the money he got for the dastardly deed he did, which some people don't do nowadays. They neither return ill-gotten gains nor commit suicide. (Laughter.) In the Indian Mutiny many women committed suicide rather than fall into the hands of the Sepoys; many parents killed their wives and daughters to save them from outrage. History is full of such examples.

Suicide has been committed by theologians, physicians, soldiers, and some of our greatest men. Mark Anthony committed suicide because Cleopatra proved false. Cato killed himself rather than grace the triumphs of Cæsar. Demosthenes and Socrates took their own lives. Seneca says, "Does life please you, live on ; if not, go from hence." Roman laws allowed suicide, and in portions of the empire magistrates could grant permission to do the act. Weariness of life, ill health, private debt, etc., were the reasons for which it might be done. Suicide was a cardinal virtue among the Stoicks. Zeno hanged himself at 98, after putting his finger out of joint. Pliny, the elder, called it the greatest of gifts God could give to men. Madame de Staël was in favor of it. Napoleon was not, and hanged those who attempted it. Rousseau's position was "to seek one's own good and avoid one's own harm in that which hurts not another is a law of nature." Voltaire revolted against this. Suicides after the Christian era were common, but Christianity had no tendency to stop them. Christianity held to the sacredness of life. Hamlet says, "To be or not to be, that is the question ; whether it is better to bear the ills we have or fly to others that we know not of," etc.

Was the person sane or insane when the deed was done ? Were there outbreaks of insanity ? Can the insane person be held responsible for the attempt, and morally wrong in the act ? The crucial test is the presence or absence of insane delusions and morbid conditions. We may have influences beyond our control. We often feel a rising impulse in sane conditions, as we gaze upon it, to jump into Niagara or to jump from a great height. Intensify that feeling and you have suicide. We cannot entirely shake ourselves from our feelings. A sane, strong willed man regains mastery by thinking of something else. Many sane persons are tormented with fancies which are banished by the persistence of a strong will.

The law does not presume insanity from an act of suicide. The law makes distinction between suicide and dying by one's own hand. In suicide, felonious intent is implied. In the latter there is held to be legally absence of moral responsibility. A maniac may die by his own hand, but to the legal mind does not commit suicide. To medical men suicide includes both classes. The word simply means self-destruction. A British judge held that the commission of suicide three days after making a will did not invalidate it. A party encouraging another to commit suicide is constructively guilty of murder.

From a review of the whole subject the following conclusions may be drawn :

1. Suicide is against nature both in health and disease.
2. Suicide, though an unnatural act, it is in the majority of cases committed by the sane.
3. Education and custom being powerful influences in overcoming instincts of nature, hence a tendency to suicide. The widespread publication of names of suicides, the nationality, age, sex, mode and reasons for suicide, promote suicide by making people familiar with it. The law of imitation is powerful in the epidemics of suicide.
4. Teaching of a philosophy and sensationalism which tends to the disregard of the truths of religion, will lead to suicide by magnifying ills of life and appealing to the depressing emotions of fear and sorrow, etc.

5. Suicide is not an impulse, but in the sane and insane it is the result of reflection and of more or less deliberation and of defective reasoning from true or false premises.

6. The great and essential distinction between suicide in the sane and insane is not in the motive or the method, or time or place, but in the mental state in which it is committed. The insane man commits suicide under a positive delusion, or while in a delusional state of mind. There is no such state in the sane suicide.

7. Suicidal tendency in the insane often leaves when the physical strength is restored. In the sane the strongest safeguard is a sense of responsibility for our conduct. This makes us strong to bear the ills of life, and not to fly to others that we know not of. Suicide by the sane is moral cowardice.

The frequency of melancholia is hard to determine. Many never reach the asylum, from committing suicide or recovery at home. Females are more subject to it than males. This is attributed to their possessing a more sensitive organization than men. Pulmonary troubles are frequent among this class. If this form of insanity does not lead to death, it is followed usually by dementia or circular insanity in a chronic form.

Classes :

1. Simple or complicated.
2. Acute or chronic.
3. The remittent or intermittent form.

In the simple form there is little disorder of intellect, and no delusions or hallucinations ; tendency to sorrow or gloom is a prominent feature of this form. In all cases it affects the conduct. Such persons often complain that they have heat and pain, etc. There is almost always torpidity of bowels, and often mild gastritis, atonic dyspepsia, etc. Very often in melancholia you have mal-assimilation because of this form of dyspepsia, that is, the atonic. In complicated melancholia, the intellectual faculties are very much disturbed. This is best seen in the hypochondriacal insane. The patient is in fear of dying, has all maladies flesh is heir to. His most frequent cause of anxiety is derangement of some

part of the bowels, which usually exists, but this condition is magnified by the patient. Sometimes these are hard to distinguish from the first class.

Religious melancholia is a distressing condition, and always of a suicidal kind. The patients think they have committed "the unpardonable sin." They mourn for their sins, pray constantly, and think the avenger is always at their heels. Small neglect of duty they magnify into great sins. In the patient's morbid idea, the issues are those of life and death. The most childish notions are looked on as being mortal sins. To many such melancholy persons, these trifles are sins against the Holy Ghost, and they feel they can never be forgiven. Strange to say, that although their souls are to be forever lost, they piteously beg to be allowed to die by violence if necessary. To the insane all delusions are facts, and the most cogent reasoning cannot drive them away. The mind is constantly racked with one idea. Many of them eat and sleep fairly well, and may live to a good old age. Many who recover look back to those days as to the memory of a dismal nightmare which leaves sad impressions. Women are worse than men. Mothers often put their children to death and commit suicide. They often reason thus: This is a wicked, miserable world, so I will send my child to the blissful regions, and I will immediately follow. They believe in immortality. Strange inconsistency; many in this condition think they are great sinners, yet are sure of going to heaven.

Many of those afflicted with morbid despondency are silent. They give no expression of their grief in words. Others are very talkative, and with great volubility pour out complaints to any one who will listen. Some who are afflicted with milder forms of melancholia take pleasure in reciting their troubles. From day to day and from week to week the same story is told with painful reiteration.

In acute and chronic melancholia, we include not only *duration*, but *depth* of suffering. Tears are not commonly shed. If a patient goes through melancholia dry eyed, and after a time weeps, it is a favorable symptom. I have often seen tears among the convalescent. Melancholia intermits

with mania in circular insanity. It also remits. The most acute suffering is experienced for several hours in the morning, after which the symptoms abate ; therefore, the greater number of suicides take place in the morning. These seem most miserable after waking from a sleep, or, on the other hand may be wearied after a night of insomnia.

The melancholic type of insanity is frequently observed in women at the climacteric or trial epochs of female life, if they should prove of long duration.

Is there a climacteric period in the male ? Yes. It manifests itself in some more than in others. It is a very vulnerable period of life. If between twenty and sixty a man has pursued business unremittingly, during that long period of time, and more especially if he has been in the habit of fanning the flame, by use of alcoholic stimulants, you will find his vitality is shorn of its resources to draw from, and that he must rest or perish. After thirty or forty years of over-doing, breaking down is too often the result, especially if hereditary weakness is present.

The rich man, with plenty to retire upon, but nothing to retire to, is the most miserable of men. The man of one passion, or dominated by the narrow limits of one idea, could have been saved from mental collapse had he conserved his energy. Rest, which does not imply stagnation, brings relief to previously worn out faculties. In some men, this idea is making money. Making money is a pleasure, and they cannot live without making money, because the habit has become a second nature. A man often says, "I will do my best to become wealthy at, say, sixty years of age, and then take my ease." He forgets that he can have no rest nor happiness except in this line of his life work.

SYMPOTMS OF PROFOUND MELANCHOLIA—

Skin moist or clammy, or dry and hot, eyes turned toward the ground ; patient looks sad, nervous of manner ; inclines to be alone ; answers all questions regarding his health in monosyllables ; gives no satisfactory explanation of his change of manner. Sometimes he is extremely restless. His sleep becomes less and less. Oftentimes mental disturbance is

paroxysmal. At first the judgment may be so clear that insanity is not expected, and a fit of "blues" is the name given to the attack. Such a person is not safe from injury by his own hand, even during this prodromal stage.

The intellect is controlled by diseased emotions. He cannot make effectual any effort for his own relief. In the second stage we have the same symptoms intensified, and many distressing motions. The intellect is markedly impaired. He may have unfounded suspicions of all kinds. The delusions are legion. One patient we have thought she was being foully murdered; another man thought he had no brains; another was afraid of being burned in the furnace. Another says a big black man is killing her children. One hears heart-rending cries of her father and mother who are calling for her. There is a man here who is condemned to be hanged for murder. Another man longs for death. Some have dread of a calamity, but know not how or when, and sits waiting for it, as he says, in the last ditch.

COMPARISON OF MANIA AND MELANCHOLIA.

1. Mania shows an exalted mental state; melancholia, mental pain and depression.
2. The maniac is restless and shows spirit of unrest; the melancholiac sits in moody silence, or moves about in a restless way.
3. The maniac is self-important and aggressive, with the system in a state of tension; the melancholiac shrinks from company and seeks solitude, or longs for death.
4. The maniac feels capable of being the embodiment of greatness and goodness; the melancholiac is the essence of all turpitude and sin.
5. The maniac eats often ravenously during the acute attack; the melancholiac is a poor eater and sleeper.
6. In mania memory is good and ideas flow rapidly; in melancholia, mental activity is abnormally slow, ideation is sluggish; extra effort is needed to think. Concentration of thought is weakened in respect to new subjects of thought.

EXAMPLES OF DELUSION—

Before commencing his lecture proper, Dr. Clark read a letter written by one of the inmates which showed a number of delusions. These were often shown, the Dr. said, in the writing of an individual, while, at the same time, delusion would not be noticeable from his speech. The reason of this was, that the act of speaking is more automatic and mechanical than the act of writing. The writer went on to say that as the Dr. knew that she was a literary genius, he would help her to win a prize of \$400 given by the *Ladies' Pictorial Weekly*, in a word competition; that it would be easy for her to get a list of words larger than anyone else. With the prospective prize, she would go to Europe, and return in April, and would take the Dr. with her, if he wanted to go, and would pay his expenses. She hoped to have her poems published by Christmas. Another inmate had written the Dr. a letter. This one fancied he was incarcerated within the walls of the Toronto University, and applied to Dr. Clark, as a Christian man, to call and see him as quickly as possible, and then if the Dr. believed he was guilty of wrong doing in the face of all the evidence, he would remain there. If, on the other hand, everything was true, he commanded the Superintendent in the name of the Father, and the Son, and the Holy Ghost, not to conceal it from him and the world any longer, or it would be at the Doctor's peril.

CLASSIFICATION—

Mania may be divided into a number of classes, such as homicidal, pyromania, kleptomania, general mania, etc. The substratal condition of all is mania. The language and conditions of the individual, as well as the pathological condition, indicates the kind. Melancholy is a distinct division. The woman who kills her child has homicidal mania based on melancholia. The man or woman who commits suicide has suicidal mania based on melancholia. So, you see, one lapses into the other. The classification is metaphysical, there being no distinct line of demarcation clinically.

MORAL INSANITY.

Pritchard calls this moral insanity. The insanity of morality is a better name. The term as used in Courts of Justice has allowed many criminals to go unwhipped of justice. There is a disorder of the moral powers which cannot be classed as simple wickedness, however great the inclination to evil. It is clearly the result of physical disease, for the plain reason that it is not a steady advance from one degree of wickedness to another, but a sudden change of the man's conduct which renders him the reverse of what he has been all his life previously. For instance, a man has an attack of fever, has a sunstroke, or receives a blow on the head, which greatly disorders his mental system. When he has recovered, his relation to his friends and to society has changed. He is morose, regardless of the truth, and also of the honor of his own family, and, it may be, profane and profligate; in short, he is the exact counterpart of what he was before the onset of the disease. No decided intellectual aberration seems to exist, so far as can be discovered; for this reason, that the intellectual faculties appear to act properly. Some say that this cannot be classed as insanity. This condition is predisposed to in men about the age of 60. A man may reach this age and then suffer from, say, traumatic brain injury. He may have been a good man; nobody could point out a single flaw in his character. He has such an injury, falls down and becomes insensible. He recovers. During the rest of his life he is the very incarnation of wickedness. You can draw the line of his change of conduct at the time of the disease. He may lie, cheat, swear, abuse his friends, etc., and yet people will tell you that there is no such thing as moral insanity; because they see that there is in the man nothing but pure wickedness apparent. Can anyone doubt that a molecular change in the brain took place at that particular time, and produced a change in the whole character of the man? The intellectual faculties are affected to some degree, although some say not; the man's inconsistencies indicate intellectual mental alienation. That the man does not realize these inconsistencies, together with the total and sudden change in his views, must

be evidence of weakening intellectual powers, and an inability to discover the correct relation of things. The effects of the disease are manifested so insidiously, being only observed by the family (not particularly by strangers, before whom he acts well), that it is extremely difficult to detect the disease in its earlier stages. In some respects his intellectual faculties are sharpened, although inconsistent; he is the very embodiment of mischief. He hides with a very plausible exterior his own defects, and depicts in glowing colors those of others. When I was in general practice, I was called in to see a gentleman who had this kind of insanity following a sunstroke. Three of us went —two other officials and myself. As he was inclined to be pugnacious, I was requested, being the largest, to go in first. As he was fond of horses, I invited him to the barnyard and made known my errand, saying, "Your people have sent me to see whether you are insane or not." He said, "I heard it; I suppose my wife sent you; come into the house and we will see who is insane." The wife was a hot tempered body. He began to tease her. He called her everything he could think of, using the most vigorous Anglo-Saxon. She got, as the common expression goes, "mad." She went at him with tongue, and revolved around him as though he were a central sun. He sat, and with a leer, every little while he would ask us, "who is insane?" (laughter) and, of course, the wife looked more insane than the man did; so we could not certify that day, but we did afterwards. The cunning grimace on that man's face was something to be remembered. Even when such individuals have delusions, they are so cunning as to hide them from the keenest investigation. Such cases are to be judged by what is seen and proved, not by what is supposed to exist. Is such a case a natural development, physiological, or diseased and consequently pathological? On the answer hinges the correct solution of each case. Were it natural development, it would come on gradually, and the man's whole life would show he was a sinner reveling in his depravity; if the result of disease, we can trace its invasion and progress by the patient's conduct and speech.

Thus it is no habit of viciousness formed by repetition, or congenital; but a change superinduced and controlled by brain disease. It is this phase of insanity which is most difficult to explain to a court, or give a certificate for. The court asks, Does he know right from wrong? You say, yes; but you may say such an ethical test is falsified every day in the asylum. Has he any delusions? No, you answer. You may be asked, Is his intellect defective, and you may not be able to point this out by any specific acts that would indicate that it was so. You may be asked if a sane and wicked man might not have all these traits of character. Were you to say this was true, you must insist on also stating that the outcrop of some depraved mind is not a parallel case. The case in question had changed suddenly, the patient not being a congenital rascal, nor one by habit or training. Never be ready to draw a conclusion from a few particulars. You must take a conjunct view of the matter. In deciding the validity of wills, it is to be remembered that the so-called moral insanity involves the intellect, and no doubt the emotions will control the conduct of such insane. It is amusing to see lawyers try to secure positive symptoms out of a patient with melancholia, insanity of morality, or dementia. In those that sit all day, as melancholics, there is no delusion, no mania, and no pronounced symptoms that can be described on paper; yet, who can doubt their mentally insane condition. Medicine bases its definition simply on disease; law on mental manifestations; when these cannot be got at, the legal definitions fail.

GENERAL PARALYSIS OR PARESIS.

One of the first symptoms in this disease is erratic conduct, unusual to the person afflicted, and often a fondness for speculation without judgment, unusual to the patient. This is one of the forms of insanity that every medical man sooner or later will have to certify to in order to have such committed to an asylum. The patient becomes after a time fickle, impulsive, and restless, but is usually in good spirits. Then may follow a change of articulation. It is not such

as you hear in hesitation or stammering ; it is simply as though his tongue were too big for his mouth. It is a lack of lingual co-ordination. It means a loss of power and control over the vocal organs. At first, by effort, he may speak distinctly, but after prolonged conversation his utterance becomes defective. In the early stage you may be deceived by the apparent physical health of the patient. His appetite is good, has splendid digestion, has no headaches, sleeps soundly, showing that the mere organic life is good. The friends, however, will tell you of a change in his character, in spite of this evidence of health, consisting of, first, irregularity of temper unusual to the individual ; second, defects of intellect, especially of memory ; third, lack of judgment and discretion in following his usual avocation ; fourth, moral perversity that may surprise his friends, who have known him as a model of propriety before this time. The general practitioner too often overlooks these premonitions, and calls this mania, or a delusional insanity, or mild form of dementia, one or other of which does exist, but only as symptoms of this underlying, general disorder. The general depreciation of co-ordination is very marked. The lips are tremulous, as in persons about to weep. When the tongue is held out, it trembles and is drawn slightly to one side. It requires an effort to protrude it. Inequality of the irides is well marked in these cases. If the dilation of the left iris was more than the right, it used to be held the patient was melancholiac ; if the converse, the patient was contented and cheerful. This does not hold good. The patient has an unsteady gait, but does not drag his feet, nor plant them down so characteristic in locomotor ataxia ; not a want of power, but a want of direction. The same is true of his prehensile powers. As the disease progresses, the symptoms intensify. At last his life is merely organic, and eats and sleeps well till near the end. He loses control over the sphincters near the end, and becomes filthy. His food must be prepared, as he has a tendency to bolt it ; and he must be closely watched or he will choke himself. At the premonitory stage you may not be able to detect any mental trouble. Many

have lost their fortune by idle speculation in the first stages of this disease, leaving their families penniless. The physical signs antedate the mental, but are often co-existent with them. Being a disease primarily of the higher nerve centres, the invasion is commonly different from other forms of insanity. The last organized centre fails first. The higher mental powers first show signs of decay ; hence, first, there is weak memory; second, feeble concentrating thought; third, flagging attention, wild imaginings; fourth, muscular enfeeblement, noticed in his handicraft. During the early stage mental symptoms are well marked. Ninety-nine out of a hundred are full of hope. The patient is a man of immense wealth in his own estimation, millions are coming to him. He owns kingdoms and bestows favors lavishly. No man can compare with him. The asylum may be his palace ; all in it his servants. His grandiose ideas enter into all relations of life. This is at last followed by dementia and death. Death may ensue from exhaustion, epileptiform, congestion or tubercular disease. The disease seldom lasts longer than four years, and, so far as we know, is incurable. I have a man who is in his seventh year ; he has lived longer than any other paretic here. He is in a state of dementia now. This form of insanity has strange geographical limits. There is little of it in Nova Scotia ; hardly ever seen in New Brunswick, and rare in Quebec. In some of the States in the Union it is unknown. The negro is seldom effected with it until he comes north. The Asiatic is free from it. It has existed in Toronto Asylum more or less since its foundation. In 1878, we had thirteen deaths ; in 1879, eight ; in 1881, five ; an average of from seven to twelve a year. Women are rarely affected with it ; there is one here now ; three have been affected in sixteen years. Here the ratio is twenty-four men to one woman. Our experience is that the better classes are those most afflicted. Our private wards are scarcely ever free from it. Paretics have enormous appetites and fatten at first ; as in all forms of insanity, causes vary. By the statements of friends the principle causes are syphilis, drunkenness and worry. On careful

examination, I think these are the results rather than the causes of the disease. The insane state may precede drunkenness when the friends may not have noticed it. Some outburst of conduct seems to have been the initiatory stage and is recorded, but subsequent close examination reveals to us that this first recorded deviation is not the commencement of the disease. The animal passions are strong in the first stages, and as a result syphilis is often contracted. I prefer the term "progressive general paresis" as the name of this disease.

SYMPTOMS—

Summary. Mental : First, unsteadiness of mind and restlessness ; Second, change in disposition, temper and conduct ; Third, impairment of reflective powers ; Fourth, general exaltation of thought, ideas and desires ; Fifth, failure of memory, at first of words and then of events ; Sixth, delirious conceptions generally connected with ideas of personal greatness and power ; Seventh, hallucinations of the senses ; Eighth, maniacal restlessness and excitement ; Ninth, increased mental weakness with incoherency ; Tenth, failures of senses and more marked impairment of memory ; Eleventh, complete dementia, passing into coma and death.

PHYSICAL SYMPTOMS, MOTOR—

1. Frequent contraction of the occipito-frontalis muscle.
2. Frequent contraction and tremor of the zygomatic muscles.
3. Muscular restlessness and unsteadiness.
4. Tremors of the tongue and partial loss of control over its movements.
5. Frequent tremor of the upper lip, as if about to weep.
6. Impairment and indistinctness of articulation.
7. Loss of control over combined movements of hands, arms and legs, and a gradual general loss of muscular power.
8. Change in the pupils. At first they are irregularly contracted ; afterwards irregularly dilated.
9. Spasmodic contraction of the masseter muscles.
10. Convulsive seizures, most marked on one side of the body, followed by transitory hemiplegia.

11. Loss of control over the sphincters, helplessness, speechlessness and difficulty in deglutition. This is followed by contraction of the muscles of the limbs, and paralysis of the muscles of respiration.

PATHOLOGY OF DISEASE—

Adhesions of the membranes are found principally over the front part of the brain. The pia mater is firmly attached to the brain substance, as if glued to it. If the membrane is torn away it leaves a rough eroded surface with a sharply defined edge. Parts of the substance of the brain come away with the membranes, and leave pits where torn away; these are very characteristic and different from inflammatory diseases in being attached in isolated spots, there being no evidence of pus. The morbid processes proceed from the brain to the membranes, not vice versa. Puncta are very numerous on the surface and in the brain. In short, it may be said to be a chronic non-inflammatory process, springing out of excessive functional activity. There is, no doubt, a change in the ultimate elements of the brain. Granular elements are seen—a result of a low form of vitality. This tissue gives no evidence of being tubercular on examination microscopically. The morbid deposit is insoluble in ether or chloroform; so it is not fatty or amyloid. It is not inorganic, as there is no reaction with hydrochloric acid. It is soluble in hot water, especially with potash. It is evidently a kind of colloid degeneration. I never examined a brain in which there was not some atrophy and undue enlargement of the vascular loops in the capillaries. The vessels of the pia mater are enlarged. The walls of the capillaries are encrusted with granulations. The surface of the membranes present extravasated blood corpuscles. There appears to be a shrinkage in the white substance; for the gray matter is unusually greatly developed in some of the specimens, with palpable tree-like plexuses of vessels. It is, no doubt, the neuroglia of the brain that is unduly developed. It is a progressive and incurable disease of the brain tissue; and degeneration takes place along lines of physiological activity. It is very much like the process of

senile decay, precipitated by over stimulation. The brain degeneration, the tissue hypertrophy, the abnormal blood supply from dilatation of the vessels, are sufficient to account for the morbid state. I have never seen one convolution adherent to another ; nor adhesions of the pia mater in the sulci. The reason may be physiological as the pia mater, which separates the different convolutions, has no network of connective fibres, but is largely made up of blood vessels. The gray matter is divided into very distinctive layers, with a red line between them. The ventricles are larger than usual. The adhesions are found usually in irregular patches, and not continuous as in inflammations. Thickened vessels are seen everywhere. It is almost impossible to tear the dura mater from the skull, so adherent is it, but also in detached spots. The minute blood vessels are aneurismal in many parts. A copious gelatinous deposit is found in the arachnoid cavity and in the ventricles, especially the lateral. The consolidation of brain tissue is evident to the touch, as well as to the resistance to the scalpel. We usually have atrophy, and as a consequence increased density, or we may find no atrophy, yet the specific gravity may be increased. That is, there is more absolute substance but no shrinkage of the brain. So characteristic are these footprints of disease, that if the brain only be given, the general life history of the individual might be predicated.

To-day, gentlemen, I intend to take up one or two matters connected with the brain, which I neglected to do when I was speaking on that subject at the beginning of the course. You are aware that there is a great advance in the study of the minute anatomy of the brain since my day. The old fashioned way of hardening the brain with chromic acid and examining with a scalpel and naked eye, and pronouncing *ex cathedra* statements regarding it, cutting it up as you would a piece of cheese, and depending on that rough way of investigation as to whether it was diseased or not, is not the method of to-day. Then came in the use of the microscope, which is to anatomy and pathology what the telescope is to astronomy. There are more wonders in the infinitesimal world than in the starry

heavens. Then, also, no two observers could give the exact appearance because they depended on their memory to transcribe what they had seen, and even no one observer could reproduce, because of this, the same illustration the second time. Then came microphotography ; and so now we get appearances, not as we remember them, but as they actually appear on the field of vision.

SHAPE OF SKULL—

In regard to the cranium, as a rule, the heads of the insane are smaller than those of the sane ; but not always. Want of symmetry is noticed—one side flatter or smaller than that of the other. Sometimes you will notice in the wards, patients with the skull high and dome-like, or compressed laterally somewhat. The most of these misshapen heads are seen in cases of melancholia. Benedict, in his work on "Heads of Criminals," points out how symmetrical the heads of the insane and criminals ^{are}, especially those of chronic criminals and insane. He has shown the wonderful want of symmetrical proportion between both sides of the skull, making a comparison between those of chronic criminals and those of non-criminals ; so there has arisen a method of detection of criminals by taking a note of the angle of the face and skull. These are taken with such exactitude that it does not matter how they attempt to change the appearance of their faces they can always be detected, because no two heads are alike. In some of the penitentiaries in France, England, and the States this system is carried out. In many we often see the square head. If the brain develops under intellectual efforts, is it not possible that the skull may be misshapen after atrophy of the brain ? In chronic mania and dementia the skull is found to be very thin, especially in the parietal regions. Exostosis and spiculae of bone are often found growing from the top and base of the skull. Not long ago, we had a case where the falx cerebri was completely ossified. In old cases the dura mater is found very adherent to the skull, and often before it can be detached it will split into layers. Exudations, not fibrinous, are often found in the dura mater.

RELATION OF BRAIN TO MENTALITY—

The brain is just a mass of nerve substance held very loosely together. Generally in animals possessed of brain of a high order it exceeds in bulk and weight all the rest of the nervous system put together. Absolutely the normal human brain is larger than that of any animal, except the elephant and the whale. Relatively to the weight of the body, it exceeds that of all other animals. The relative size is no criterion of intelligence. Man's brain averages about one-fiftieth of the weight of the body. The lizard and the canary exceed this relatively, but the brain power is not determined in this way. The gray matter and number of cells are the proper standard by which to measure brain power. Here man stands pre-eminent. The idiot or savage may have a large brain, but little gray matter. The convolutions are more shallow. The specific gravity is greater as a consequence. The brain of a man differs in size, in regard to gray matter, from that of a woman. In the female, in the frontal region, this is strikingly true. If we take measurements from the fissure of Rolando forward, the proportion is about three to four, as compared with man. The standard is not only the amount of gray matter, but is determined by the cells. Small brains may have more power and more capacity on account of having a larger number of cells. I know of men who wear number 6½ hats who are well known for their intellectual ability, because of a high brain organization.

BLOOD SUPPLY TO BRAIN—

I shall discuss, also, the circulation of the brain, which I did not do before. You will remember that the carotid artery of the right side has a different origin from the carotid on the left side. On the right side it arises from the innominate artery, as also does the sub-clavian; while the left springs directly from the aorta. I have often wondered why the difference exists. There must have been some object in view. I think the possible reason is, that were the right carotid to spring from the aorta, and the subclavian, too, you would have two large orifices close to

the heart, which might act in the same way as an aneurism, by reducing the force of the blood flow. So nature has provided one orifice near the heart, and two further away. You will remember another point, too, in this relation, that the angle with which the innominate artery springs from, the aorta differs from that made by the left carotid with the aorta, the angle in the first instance being much more acute on the right side than that on the left side. As a result more blood flows through the left carotid than through the right, and the flow is more in a line with the long axis of the aorta because of this change in direction. The left hemisphere is larger than the right, as a rule, therefore it requires more blood. Emboisms are found more frequently in the left than in the right hemisphere, because in the flow of blood vegetative growths from the valves of the heart find a more ready entrance into the left carotid. As these vessels go upward into the brain there is another peculiar provision, in that the internal carotids and the vertebrals enter the skull with a sort of S curve. The object of this is, I think, to break the force of the powerful impulse of the heart; that it would be impossible for the brain substance to continue in tone if there were not some check to the intermittent and powerful impulse of the flow. Then, too, look at the circle of Willis. It acts as a reservoir, and no doubt for the same purpose as the curves. It would not be wise to check the impulse of the heart at once, so we have the two impediments, and the blood is brought gently into the brain, just as the mighty pumping engines at the water-works force the water into the reservoir instead of directly into the supply pipes, which would possibly burst them,—the water from the reservoir flows gently into the supply pipes, as from a lake. Then we find the distribution of the blood supply to the brains is what might be termed, at first sight, abnormal; although nothing in nature is truly abnormal, pathology being as normal in its laws as physiology. In most other organs the blood is carried into their centres and distributed, but not so here; if so, congestion of the brain and arteries would impinge on the delicate nerve substance of the brain, so that it would be impossible for us

to think, because of the disturbance to the circulation ;— were it distributed, as it is in the liver, for instance. The brain is supplied from the piiameter (holy mother, nourishing the brain as a mother does her child), which dips down into the organ. There are, of course, a few nutrient vessels to supply the automatic life of the brain, but the great mass of blood comes from the piiameter. In the nutrient vessels there are no anastomosis, therefore you have limited necrosis from embolism or thrombosis, where the piiameter supplies the blood. As the vessels that go from the piiameter do not anastomose, each vessel has its own vein, so you can have local destruction of brain substance without it being extensive, as in other parts of the body. These are remarkable things in themselves.

SIMPLICITY OF STRUCTURE OF THE BRAIN—

In connection with the brain another remarkable condition is this, viz.: You would imagine that if any organ in the body required to be complex, surely the brain would be that organ. If any organ has multifarious work, it would be the brain —from thrill to sensation, from sensation to knowledge of that sensation, and from that to will power, etc. It has the simplest structure of any organ in the body. It is nothing but a gathering together of cells and nerve fibre, with connective tissue binding them together. The more specialized an instrument is, the less multiform is its work. If you take a sewing machine, all its varied parts are severally combined for one object, to sew. Take a watch, with all its minute and delicate mechanism, it is put together for the special purpose of measuring time; that is all it is good for; so with a steam-engine, its work is specialized. The more simple an instrument, the more multiform the work it can do. Give a Canadian backwoodsman an augur and an axe, and he will do almost anything with them—simple instruments, with many applications. He builds houses, makes sleighs, bridges, etc., with one or two simple tools. (Every young man and every young woman should have the tactile erudition that comes from handling tools, irrespective of any particular trade or occupation). Go down to the

new City Hall and see those derricks raising stones of an enormous weight and placing them gently where they are required, moving them in any direction. It is nothing but the application of the lever-power, with rope and tackling attached ; simple in its arrangement, many-sided in its application of movement, because of its simplicity. So Providence has designed that the most complex organs are devoted to one special work, and the simplest organs in the body do the many sided-work.

BRAIN CELLS—

Another point in connection with the brain is its cells. Drawing a picture, Dr. Clarke said, "you can imagine that to be brain." (Laughter.) You know the thickness of the gray matter—it is very thin. Then you know its different layers of cells ; you can divide them like the coats of an onion. In these layers you have different cells. Towards the surface you have round cells, then ovoid, and afterwards triangular, and then fusiform, and the deepest are pyramidal cells. These have tails to them—in other words are caudated. These are wonderful things, because they are the boundary between the physical world and the mental world. There is here a hiatus that has never been spanned, and never will be, because it lies beyond our ken. These brain structures are remarkable because of their simplicity. Whether the cells are a continuation of the axis cylinders, or have a distinct autonomy of their own, yet they are wonderful. They are from 5,000,000 to 20,000,000 in number, and even 60,000,000 are said to be in persons with a large brain. They are continually being formed, and continually dying, and each cell must bequeath to its successive children the knowledge which it is possessed of ; if not, we have not any reason to suppose we would have any memory. The physical conditions must be reproduced. You remember the ravines, lanes, roads, meadows and woods, and a hundred and one things in connection with your early life. You can bring them up to your recollection—a mental photograph, so to speak, of what you have seen. These cells received these existing visual impressions through the

optic tract, and were imprinted on these ever-shifting organisms. Generation after generation of cells have taken their place since that distant time. Whence the impressions? The cells of my brain must be a different generation removed altogether from that which received the impression; therefore, the parent cell must bequeath its knowledge to its child, and the child cell to its offspring, and so on throughout our whole life. The molecular changes in the first cells must be bequeathed to their descendants. All recollections are handed down from year to year as long as we live. How do we know? I will give you an analogous example. Take a printer, he goes to work when he is a boy in a printing office to set type; he takes a stick in his hand, and carefully picks out the letters of the alphabet, commas, semicolons, etc. What a long time it is before he has acquired the prehensile hardiness and mental acumen to do the work quickly, as he does after some years of practice! You know how long and painfully he labours to set type correctly. When he becomes a man he has wonderful tactile facility, and can present a very clean proof. How quickly he sees the type and puts it in its right place. Suppose he leaves the printing office at twenty years of age and enters some other occupation for twenty-five or thirty years. The muscles, cells and arteries are all replaced in this time by new tissue cells throughout, time and time again. He goes back to the printing office, and, after a few hours practice, he will set type with the same deftness as he did when he left it. This transmission goes on through the system, the recollection being bequeathed as a legacy to the new cells.

DISEASED CELLS—

In insanity we will suppose there is congestion. You have the cell supplied by an artery, and a vein running from it. If you find the brain in an anaemic condition, the exosmoses and endosmoses through the parieties of the cell and parieties of the blood vessels are not in equilibrium. The nutriment of the cell is interfered with on the one hand, and, as a consequence, on the other hand, the dead

tissues are not permitted to find their way out into the various ambulances of nature. Whether it be from abnormal thickening, or whether it be from thinness of the cells, so that proper balance between the dead tissue and the living is broken up, you have brain ænæmia, and, in cases of melancholia, depending on that, you find this one of the conditions after death. Very often either attenuation or thickness of the walls impedes the progress of the nourishment of the living, and eliminating of the dead tissue. What is true of one cell is true of all. (I would give more for milk and porter-house steak than for all the medicines in the pharmacopœia in ænæmic cases.) Here is the brain of a person who died here some ten or twelve years ago. I wish you to notice in the first place how shallow the sulci are. Any one who would examine this brain and see how little gray matter there is, could predict at once the amount of mentality. Here is another brain, which was taken from a man who was senior wrangler in Oxford. You will notice how deep the sulci are and how much grey matter there is. The amount of gray matter could be relatively estimated by taking tissue paper and spreading it out on a brain like that, shoving it in the different sulci. In spreading it out again, you will notice two things, that no two hemispheres are alike, as far as the sulci are concerned. In the second place you would notice the area of the brain was enormous—more than you could possibly imagine unless you thought the matter over. The increase in this way is very great. Some idea can be got by comparing the surface of a ball with a four-inch diameter with the surface of one of a two-inch diameter. If I remember rightly, the proportionate areas is as the squares of the diameters. The surface proportions here are as striking in respect to areas.

COURSE OF VENOUS BLOOD—

There is another thing I might mention here in respect to the flowing of the venous blood from the brain. In other parts of the body the veins immediately return the blood to the heart, but here the venous flow is directed at first away from the heart. You have the venous blood in the

body forced forward by the *vis a tergo* of the arterial blood, the movements of the body, and the muscular movements. The venous blood will rise to the source whence the arterial blood came. The tea in the pot and in the spout will rise to the same level. Finding its way back from the different sinuses in the brain, the venous blood empties lastly into the great longitudinal sinus. Where the central venous blood flows into this sinus it meets its larger current at an angle which makes it oppose the blood current in the sinus. The tributary of a large river usually empties itself in the direction of the stream into which it flows. The above arrangement of the confluence would tend to slow the current in the vein. If the venous blood flowed in the same way as that in the great sinus, the brain would be rapidly depleted, and the mental condition would be soon affected. I know of no other reason for this arrangement. The pia mater is not only an investing membrane, but a vascular plexus. In insanity, where this is diseased, we find it often in a varicose condition. The exudation of the pia mater in insanity is not organizable, but fibrino-albuminous, in kind. Congestion of the pia mater, and serous effusion in its meshes, are always points to be noticed in atrophy of the brain. The brain vacuum in the skull is filled in by serum. There is about fifteen per cent. of the skull cavity made up of fluids, vessels and connective tissue. Our old friends, the phrenologists, say the brain presses on the skull and makes the bumps. Nature has not done so. In the front of the brain the two plates are one and a half inches apart. The study of phrenology was good in that it led to study of the brain, but, so far as science is concerned, it has long since been buried without hope of resurrection.

In acute mania and melancholia the layers of blood from extravasation are often found in the tissue. The choroid plexus is subject to the same law as the piamater in this respect, being a part of it.

CENTRE OF BRAIN VITALITY—

There is no organ of the body that I know of that will stand more tearing through by missiles, instruments, or

disease without affecting the mental life, than the brain. This is a remarkable fact. I hold that you cannot lacerate any other organ in the body with less bad results than the brain. I am convinced in my own mind that the directing power or the physical centres are not in the hemispheres. If you can tear the hemispheres to pieces and the patient still survives, although, afterwards he may have epileptic fits and headaches, yet still with enough judgment to be a good citizen, it is evident that the hemispheres cannot be centres of physical life. There are in the base of the brain, a number of little brains, the optic thalamus, the corpora quadrigemina, the corpora striata, etc., that have both gray matter and white. None of these central organs can be attacked by violence without death ensuing ; so they are the centre of vital life, so far as the brain is concerned, and I have no doubt they are the centre of pyschic life. The hemispheres are batteries that provide the power by means of which these little brains can perform their work. These little brains are the directing power. It is just like a man who is sending a telegraph message who is depending on the battery altogether merely for the power to do so.

BRAIN ATROPHY—

The apices of the sulci are, on the same plane in health. In old age, there is an uneven shrinkage in the convolutions. Atrophy of the cortex is seen in paralytic dementia. The color changes from gray to a yellowish white. Out of 63 brains examined by Tuke, there was an average atrophy of $5\frac{1}{2}$ ozs. In 13 of these, the average atrophy amounted to $8\frac{1}{2}$ ozs. Some were atrophied as much as 14 ozs.; they were all chronic cases. Normal atrophy commences between 45 and 50, and increases from year to year. You may have atrophy of the brain and still an increase in the number of the cells, the cells remaining in a condition of tone and power ; therefore you have an explanation of the great vigor of the mind in old age in many of the great workers of the world. Brain tone is not lost in the same proportion as is connective tissue, in which is the shrinkage.

PROGNOSIS OF INSANITY—

Ninety-five per cent. in Toronto are incurable. An average of about eighty vacancies is about all that can be provided for. The room for recent and curable cases is very small. We have the remnants of fifty years of chronics. The curables go away. The chronics continually accumulate, and are a legacy to us, until death takes place. We should have a curative insane asylum in Ontario, and the chronics in cottages as in Mimico. Two asylums should be curative, to which those in acute and curative stages should be sent.

Hereditary predisposition is unfavorable to recovery. The well-marked insane diathesis must be taken into account in speaking of recovery. Recoveries are seldom permanent in members of this class. This is strikingly true if the exciting cause takes the form of puerperal mania. But, on account of congenital defects, imbecility and idiocy are hopeless. Those with low mental and moral powers, and who cannot justly be called feeble-minded, do not recover as do higher types of manhood. It is on this low plain of mentality where petty crimes and insanity are. Dementia is rarely curable. General paralysis is incurable. It has often remissions, but is fatal in the end. Epileptic insanity is said not to be curable. Moral insanity is an unfavorable form, and any perversion of the moral instincts is a bad sign, especially if this condition is prolonged. In those arising from eccentric causes, such as puerperal mania, urea in the blood, dyspepsia, age of puberty, and the trial epochs of life, we have either hopeless insanity or speedy recovery. Delusion insanity and monomania are not hopeless, but may cause apprehension. The hearing of voices and seeing sights, having no existence except in the imagination, are unfavorable as regards recovery. Insanity brought on by intemperance is not favorable as a rule, and, if intermittent, is very unfavorable. Organic changes have taken place, through poisonous influences, on the great nerve centres, hence the malign fixity. In acute mania, a good many recover. The same may be said of acute melancholia. When in practice, never promise recoveries in melancholia in a hurry. Sometimes they may take place

in a hurry, sometimes after a long time. Do not teach friends or relatives to expect too much in any form of insanity. Uncomplicated hysterical mania is a favorable type. Typhomania, in a large number of cases, is fatal. Alteration of excitement and depression are bad signs, even should such not rise to well-marked circular insanity. Insanity after any fever or inflammation is not favorable. It points to permanent lesion of the brain. The insanity of women is more favorable than that of men. Dread of want, refusal to take food, suicidal tendency, fear of enemies and dread of poison are unfavorable. A sudden attack is more curable than one coming on gradually and prolonged, that is if it is not traumatic. Gradual recovery is more favorable than a sudden one. Cures in insanity diminish with the frequency of the attacks. About one half recover by early treatment; in acute cases much more than one half. At best, not more than six per cent. recover after one year of disease. Dirty habits in those not affected with acute mania is not a good sign. Good physical health, with no corresponding mental improvement, is not a good sign. A returning sense of decency, a rekindling of natural affection, a return of accustomed habits and tastes, as well as modes of speaking—in short, a return to personal naturalness—are all favorable signs.

TREATMENT.

In treating brain disease, we cannot localize. While I am a believer in the administration of medicine, I may say that as far as brain disease is concerned, medicine takes a secondary place. If I had my choice in brain disease, between good nursing, good hygienic conditions, and good feeding, and a doctor, and had to give up one or the other, I would take the nursing, etc., and let the doctor go. I am a great believer in the "gospel of fatness." I have more faith in beefsteak, and milk, and eggs, and such foods, than in all the medicines of the pharmacopœia. If Robinson Crusoe had been left on medicines instead of food, his days would not have been long in the land. Medicine has its place, but it is not food. Tonics, stimulants, etc., have

their place, yet never forget that the primary conditions of health are good food, cleanliness, and sufficient air. These should be especially insisted upon in the treatment of the insane.

We cannot localize, so must treat the brain as a whole. Our medicines act through the general system. Even when we can localize, we have to combat disease of the brain by therapeutical measures, acting on the whole of the cerebral structure. What symptoms do we wish to alter or modify? What are the ingredients and proper quality of the medicine? Then we ask, Is it better to begin one medicine by itself, or combine it? The old-fashioned custom was to string together a list of substances, in the hope that one would hit the nail on the head. Polypharmacy still lingers. Combinations should not be made at haphazard. Quinine, iron, and strychnine do well together. Aromatic spirits of ammonia improves iodine administration. One medicine often by admixture modifies very much the action of another. Atropine prevents the bad effects of morphine. Some medicines need to be given in large doses. Influence of habit and toleration of opiates and narcotics are to be remembered. We must not forget the accumulative action of certain drugs, as digitalis, strychnine, KI., alcohol, etc. It is beneficial to intermit such drugs.

Dosage in brain disease should be remembered and regulated according to the effect desired. The permission of a sufficient interval allows necessary elimination. Ill success in nervous diseases is often the result of inadequate doses, and too often repeated; irritability instead of tranquility follows the effect of small doses. Sixty grains of chloral, for example, at once, are better than twenty grains every hour. Hyoscyamus and morphia, and all other tranquilizing hypnotics follow the same rule. We ought to use full doses. Don't administer too many drugs together. It is hard to say what the combined action will be. This is most true in treating nervous diseases. The older you get the less you will use such combinations as chlorodyne. Don't trust to teachers or text-books as against your own experience in any treatment. One person is susceptible to

Hg. quinine, another to opium, etc. These idiosyncrasies are one of the mysteries of nature.

1. In treating the insane, correct any general derangement of the system, for the insane are subject to the same diseases to which we are all subject; and in this respect our general practice will guide us. There should be a constant search for outside causes of insanity, such as dyspepsia, heart disease, uterine disease, rheumatism, etc. If any of these are exciting causes, these are the immediate objects of treatment. The remedies are those you generally use. So a large class of such cases must be left to the general practitioner.

2. Those in whom there is a pathological condition of the brain consequent upon, or independent of, general physical disturbances, and those who have dangerous and urgent symptoms, without mental disturbing conditions.

Treatment of Mania.—Formerly this was thought to be akin to meningitis. The orthodox purging, bleeding and salivation were resorted to. Tartar emetic was given. Plasters and the cautery were applied to the neck. These heroic remedies are almost unknown in our day. The levelling down has been followed by the levelling up. In mania, sedatives or narcotics may be required. Too often death will occur from sheer exhaustion. If we can husband the physical resources we have done much to assist recovery. We must have good food, tonic treatment and sleep. Plenty of food and fresh air must stand first. Hygiene and dietetics must be supreme, or medicines are broken reeds to lean upon. If there be great irritability and insomnia, and no evidence of organic disease of the brain, some preparation of opium is best. Caution in using it is always required. A good method is to administer the tincture with one of the ethers, say sulphuric—doses of 30 drops of each three times a day. This mixture seldom constipates the bowels. Strange to say, this combination often relaxes them. A good result is often also found by adding deodorized tincture of opium to KI. If you find a state of hyperhaemia existing, don't give opium. If you find the eyes injected, turgescence of the superficial vessels of the head, pulse neither full or strong,

don't give opium. To give opium is to increase cerebral congestion, and decrease chance of cure. The fire of acute mania will burn out after a time if we can keep up the strength with food, and quiet the nervous system. The waste of tissue and nervous energy are great. Food can only supply this. If indications are as stated, give opium, beginning with twice an ordinary dose. Repeat every four hours for a few doses. If three doses have no effect do not continue them, or you may find sudden cessation of the mania and a dead person. The extent of the disease and the sedative effect of the medicines may, in combination, produce fatal results. Never force opium or its salts on the system if no benefit is seen after a few doses. This statement is more true of the salts than of the opium in the natural state. Some tolerate opium, while others don't. It is to be remembered death from opium may take place without coma, in a condition which seems to be a combination of a shock and asphyxia. The same condition is seen in death from delirium tremens—failing pulse, shortness of breath and death. Chloral hydrate is recommended, as it produces a state more like simple, natural sleep. It produces chloroform in the blood. In heart affections, it must be given with caution. If indicated, not less than 40 grains should be given at one dose in mania. I have given 2 drams with good effect in the acute form of mania. Within the last few weeks I have given in sthenic mania, 30 grains each of chloral and KI. Chloral diminishes the heart's action and lowers tension. Its effect lasts about eight hours. The stomach tolerates it. It does not constipate, does not disturb secretions, does not lose its effect by repetition. But it does not seem to have the same restorative effect as opium. Chloral and morphia do well. KBr. with cannabis indica or Hyoscyamus, or any vegetable, is the most powerful remedy we have, and is especially serviceable in the climacteric of women, or in hysterical insanity, or insanity of alcoholism, or uterine insanity, such as puerperal mania. This is particularly true in invasion of the disease, where restlessness, sleeplessness, loss of control and mental alienations are manifesting themselves.

In treating the insane, it is well to remember that the insane sick do not complain as the sane do. The demented patient may have retention of urine, loaded bowels. Symptoms may be of such an obscure nature that they may escape notice until they assume a serious aspect. Other patients have delusions, and think they have diseases that have no existence. You cannot reason the matter with them; but, waiting for developments, give a place, and in this way employ mental therapeutics. In these two aspects we labor under a disadvantage which does not exist in treating the sane. When medicine is given to a sane person, we are guided by the account the patient gives us of the effect of the previous administration. There may be idiosyncrasies against certain drugs of which we are not aware. The information the insane give you, you cannot rely upon. Under these circumstances, we must fall back on our experience with drugs, until we are convinced of their negative character or beneficial results. Medicines are only assistants to nature. We cannot give medicines to take its place. There are no cure-alls. We give stimulants, tonics, sedatives, etc.; but, in all, we are only trying to assist nature. We cannot originate any powers that nature does not possess. We can only steer the vessel, but the propelling power must be left to nature.

Insane disease, like mania, will often run its course even in spite of all remedies. Our aim must be to assist nature in its struggles against disease, by supplying pabulum, by stimulating, by tonics and by as little intermeddling as possible. One of the first principles in treating the insane is hygienic surroundings. This is more important in their case than in treating the sane. At their homes the windows are apt to be fastened down and the shutters put up. Doors are kept shut. With no fresh air and sunlight they are shut in and breathing vitiated atmosphere. Personal cleanliness is too often neglected from ignorance, or from fear of exciting the patient. Food is given irregularly. A combination of firmness and kindness is not often found in private houses. You know how indispensable these simple requirements are to health. Again, medicines are left to be

administered. The doctor's back is no sooner turned than some local wiseacre throws doubt on the wisdom of the doctor. The advice of the ignorant is followed, while the doctor is held responsible. That has been our experience many a time, and there was no remedy for it but a determination to have necessary rules carried out, or a relinquishment of the charge. All the conditions, except hospitalism, are advantageous to recovery in an assylum. The family physician has to contend with, when patients are kept at home, the ignorance of relatives and the officiousness of friends. They are far wiser than the doctor. His measures may be ignored altogether. Then the quack with his nostrums may be sought after. He cures all, and has a plethora of promises, which no honorable physician will ever give. It may be, that friends are recommending this remedy and that, which worked wonders in somebody else similarly situated. Weak relatives give in, and the patient is a victim of too much zeal and ignorance. In such cases recommend asylum treatment. Under such a change of circumstances the chances of recovery will be increased. Not that the medical officers can do so much better in treatment than the intelligent outside practitioner, but in asylums no outside interference is allowed.

DIET—

Diet is paramount in the treatment of the insane. Nerve tissue is nitrogenous. There is no tissue force present without it. It is the oxygen absorber of the system. Nitrogenous meals and grains such as oats, barley and wheat, are dietary medicines, and should be given as much as possible, as phosphates, conjoined with lime, soda and potash are paramount in building up nerve tissue. These elements seem to enter the system with the albuminates. If prolonged deprivation takes place of any of these, we have an evidence of loss of muscular vigor, and presence of debility, anæmia and prostration. Deprive the body of these foods, and medicines will be only a broken reed to lean upon. Remember in all forms of insanity there are two classes of lesions; first, the constructive class of lesions. These include disorders of

function and structure, such as are involved in inanition, indigestion, non-assimilation and the toxicants. Now, in these constructive forms of lesions, to counterbalance them, we need two classes of remedies. First, the class which gives nutrition ; secondly, the depurative (the purifying class). The former furnishes building-up material, and the latter rids the system of effete and toxic accumulation. The second class of diseases may be called those of destruction. They embrace the various cachexias, such as cancerous, the syphilitic, tubercular, and different forms of atrophy, such as atheromatous and other degenerations. The treatment in this class must be tonic, stimulant and alterative. For instance, you will have men come to your office, men with nerve prostration or some neurasthenia. You will find one man strong and able-bodied, with an appearance of health, yet he will tell you he cannot think as well as he did. By noon he is tired. His concentration of thought is weakened. He has a feeling, as a man pithily told me once, of "gonesness." But he is apparently the picture of health. You know the very best thing for that man is fresh air and exercise, because he has plenty of muscular strength to work, and you want to build up the nerve centres. The next man is a thin, puny, anaemic man, a weak pulse, insomnia, poor digestion. It is folly to tell that man to take physical exercise. The more he takes the more prostration he will have. He wants rest and little physical exercise. It is in that condition a mistake to tire such a man with muscular exercise. In tiring, you will have gone beyond the bounds of healthy exercise, and prostrate rather than build up the man. You have to treat the two classes differently.

In the class of constructive, the master builder is hampered for want of material. In the latter case such leisons have taken place as require alterative and tonic treatment.

MORAL TREATMENT—

The mind is centred, as a rule, on the patient's complaints in insanity, especially in melancholia. To employ such in work a great point is gained. To work needs attention, hence they get away from themselves. Work gives exercise.

No one can be healthy without it. The circulation is languid, the nutritive processes are slow and need natural stimulation, which exercise gives. And here, and in all other asylums, amusements are not without influence—such as dances and concerts, and plays of various kinds. They may do more good than we are aware of. Such is very pleasant even to the chronic, and serves to beguile the weary hours of an otherwise monotonous life. Cure if possible. If this is not attainable, give comfort.

THE ACTION OF K.BR.—

It affects the nervous and muscular systems in every part. It acts as a nervous anaesthetic, and also on the mucus and integumentary surfaces. It affects the muscular organs of digestion, and the organs of respiration, and urinary excretion. Its sedative action on the temperature, circulation and secretions explains the application that has hitherto been made with this salt in nervous diseases, etc. It is by its anaesthetic and sedative action that it controls the most complex neuroses we know of; as epilepsy, chorea, hysteria, etc., just as it does in the localized affections, as whooping cough, palpitation of the heart, dysuria, etc. In this way its sedative action controls the circulation and renders it suitable for the removal of any hyperæmia, seen in the different neuroses, etc., especially those which so largely depend on congestive processes. Its effect on the deranged centres are very striking. While bromides and iodides are very valuable, it is not well to give them continuously, since glandular insufficiency might be the result; or it may be muscular weakness and temporary nerve paralysis. Dr. Bennet, of London, in a book recently published, "Clinics on the Effects of Bromides," gives these statistics: 117 cases that he had under treatment and observation from a period varying from six months to four years, 12 per cent. had no attack under treatment. In 83 per cent. the attacks were much modified both in number and severity. In 20 per cent. the treatment had no effect; and in 2 per cent. a number of attacks were augmented. He noticed no difference in the effects of the drug whether the disease was

hereditary or not, complicated or not, in the young or old, in the healthy or diseased. He used it six years, and found no bad effects from it.

HYOSCYAMINE—

For the last few years we have used hypodermically in violent cases of mania Merk's Hyoscyamine, beginning with 1-16 grain. We added glycerine and carbolic acid to prevent decomposition and putrefaction. You must remember there is a great difference in the salt whether it is amorphous or crystalline. Amorphous salt is much stronger than crystalline, because it has little water of crystallization. It is a calmative in mania, and there is no doubt it quiets a patient immediately, and its influence extends for about eight hours. We find, however, that it is soon tolerated by the patient. After a few doses have been given they must be increased very much to produce the same effect. We have given $\frac{1}{2}$ grain hypodermically after it was used for some time. It is often tolerated better than opium or chloral hydrate. I experimented on myself with this drug. I injected 1-8 grain of hyoscyamine, and I confess I had a very unpleasant night of it. I did it before eight o'clock in the evening. I didn't go to sleep, but felt that my arms, hands and feet weighed tons. Everything looked that peculiar ghastly color in which you see persons appear in the vapors of burning alcohol. The furniture in the room was duplicated. I had a dry tongue and fauces, and when I attempted to take a glass of water I had not the power of co-ordination—my hand would go a foot or two below the glass. A more unpleasant night, I don't think I ever spent. I had a grand panorama, no charge for admission. I am convinced that it is not the narcotic people would imagine it is; for 1-8 grain is a large dose. It does not effect the brain to the extent we imagine. It effects the spinal cord, and those parts of the body supplied by the spinal cord. The sympathetic was effected. I had palpitation of the heart and intermittent pulse, and it took me three or four days before I became myself again. I confess I do experiment upon myself occasionally, but I am more

than ever careful about the quantity taken. I am convinced that the description of hyoscyamine, as a brain sedative alone, is not correct. Hyoscyamine is prompt and certain in its action. It is non-irritable as a hypodermic injection. It is to a greater or less extent, in large doses, a hypnotic with the insane. We often find that drugs do not always affect the insane as they do the sane, possibly on account of the lower vitality of the tissues.

Hyoscyamine did not effect me like it does the insane. I found dilatation of my pupil and partial paralysis days afterwards ; but few of the insane have that condition. After the effect passes away, the insane are just as well as ever in walking, prehensile powers and general muscular movements, etc., showing that the effect on the insane is not the same as upon the sane. It is depresso-motor in large doses, or an exciter to the motor centres in proportion to the dose given. It shortens mania or delirium. It does not affect nutrition, if only given in one full dose at night. Therapeutic writers say it is a heart depressor, and to some extent this is true ; but among the insane I have seen dozens of times an irritable pulse become regular and normal under its influence, even in acute delirious mania. Hyoscyamine being so dear (30 cents a grain), it will not be much used in private practice ; so the tincture of hyoscyamus may take its place. If so, it must be given in large doses. It has often failed in producing good results, because we are afraid of giving it in sufficient quantities to produce the desired effects. From two drachms to one ounce have been given by me with good results. When in general practice, I used to give small doses of it, afraid to give large ones. In mania, as in delirium, you can give large doses without producing the same effect, as if there were no mania or no delirium. This law of toleration is seen in general practice. Take a woman in collapse after post-partum hemorrhage. Cold sweats, fainting, feeble pulse, everything indicating a serious condition. You know very well you can give enough brandy to make three or four people drunk without having any brain effect. So in the delirium of typhoid, the result is the same. If it begins to produce alcoholic indications you may be convinced that the

patient is getting better ; so with all such toxic agents. If the tincture of hyoscyamus is combined with, say, a drachm of compound spirits of ammonia, or the same quantity of sulphuric ether, the combined effects are beneficial. The drawback of this drug is that it has not staying power. It will produce little constitutional disturbance in the insane afterwards. Three drachms of tincture of hyoscyamus equals thirty grains of chloral, or has as much effect as thirty drops of laudanum. I think the mono-bromide of camphor is a potent factor to produce sleep, especially where there is delirium. Four grains in a capsule every hour will have the desired effect after two or three doses. Sometimes the first dose is enough. If these three which I have mentioned are ineffectual, then I have found a combination of KBr and cannabis indica, or conium produces a quieting effect even if they do not narcotize. I am not sure but that this is an advantage as far as the brain is concerned ; for it means less interference with the normal blood supply, and it does not increase the congestion already existing from the mania. H C N and digitalis and tartar emetic have not been satisfactory with me. With the present state of poly-pharmacy we have all kinds of remedies. Beware of druggists in the preparation of all kinds of so-called "cure-alls." Many of these elegant preparations are not of much use, but are got up to sell. If you buy some of those expensive drugs, you are sold. If any of the ingredient are unknown, believe they are made up to sell. If there is anything hidden by druggists, or anyone else, that compels you to go to them to buy, then there is something doubtful about it. No first-class medical man will keep things in the dark. What would we think if my old teacher, Sir James M. Simpson, had kept the discovery of the use of chloroform in the dark? What would we think if the discoverers had kept in the dark the benefits of inoculation and vaccination ; if Chamberlens had kept the use of forceps in the dark ? One of the grand features in connection with beneficial discoveries in relation to our profession, is, they are never hid nor patented. (Applause.)

SULPHONAL—

Recently we have used sulphonal with good effect in cases of mania and melancholia. It is a good sleep producer. It operates in about four hours after administration. It has no taste. It can be given in coffee, or tea, or syrup, without the knowledge of the patient. It is hard to dissolve. It is more sedative than narcotic, and acts for about forty-eight hours. Doses: fifteen to thirty grains, but I have given forty grains in one dose.

No powerful narcotic or sedative should be used night after night except in great emergency, or in epileptic insanity. It is not so much the object to choke off the physical condition, as it is to establish a series of relatively lucid periods, and thus to tip the scales on the side of struggling nature to overcome the pathological influence. It should be borne in mind, mania disappears, not suddenly, as a rule, but by a series of oscillations between the health and diseased states which may finally merge into a healthy equilibrium. In the absence of a specific remedy, follow physiological lines of treatment. No mania was ever choked down by drugs alone. It is well even intermittently to let nature get on her feet and have a chance to struggle after freedom.

I had a patient who was admitted about two weeks ago. She had been drugged daily with large doses of chloral, opium and KBr, when in a state of mania. She had been in that condition for about two months. I administered no drugs, but gave her hot milk, meat and eggs, and she went away well the other day, strong and stout, recovering without drugs at all. In this case she was over-drugged. They attempted to stamp out the disease by inducing stupidity.

Formula for hyoscyamine mixture : first,

Merk's crystallized hyoscyamine	1 grain.
Glycerine.	$\frac{1}{2}$ grain.
Carbolic acid.	$\frac{1}{2}$ grain.
Distilled water	1 ounce.

Dose: 1 to 3 drops.

If they should be contra-indicated, try drachm doses of one of the bromides with cannabis indica. I have found that the stomach will not retain some of these remedies, and if you cannot give hypodermically, give a suppository of morphine and camphor combined, and it is astonishing what effect it will have on the system.

Another form :

Chloral hydrate	2 scruples.
K. Br	1 drachm.
Sulphate of morphine	1 grain.
Syrup of ginger	1 ounce.
Water	1 ounce.m.

One tablespoonful at bed time, to be repeated in one hour if the patient is not asleep.

Another form :

Chloral hydrate	$\frac{1}{2}$ drachm.
Tincture hyoscyamus	2 drachms.
Water	1 ounce.

For one dose at bedtime.

I find dialysed opium, the same strength as opium, a good form to use. The same is true of bi-meconate of morphine. Neither of these has the unpleasant effect of opium in other forms.

Conium in one or other of its forms has been recommended in mania. It has been tried here, but I never could get any results. It is a very uncertain drug. I think it will never be a valuable remedy in maniacs, except with K. Br., if at all.

Ergotine, Dr. Creighton Brown says, is good in epileptic mania. He found it useful in periods of perilous exhaustion, which the excitement so often causes. He explains its action on its well known influence on the blood vessels. We have found it beneficial here. Fl. Ext. is given in doses of $\frac{1}{2}$ drm.; tincture, 2 and 3 drms., three times a day.

Our experience with Ergot has been good, on the whole, in some cases of acute mania, not chronic. It combats cerebral hyperæmia as the result of former excitement. I have found it good in insomnia, which is often a signal of coming trouble. It is given in the initial stages. It modifies the attacks of epileptiform convulsions, and regulates the digestive functions of melancholiacs and paretics. Three hours natural sleep in twenty-four hours is better than the toxic influence of any drug. Medical brain strength is only to be employed when nature fails. It gives the vital powers a chance for life, and should be discontinued at as early a period as possible. Where sleep increases from night to night, it is a good sign; natural sleep of even short duration is the best restorative.

ALCOHOL—

It is fashionable to ignore alcohol as a medicine. One medical officer of this province has discarded it and hydrate of chloral and opium, and rejoices that he can do without them. He might have added all other drugs to the list, and dismissed himself and all his officers and other medical appendages of a curative hospital. Don't trust to such delusive ideas. If you find the patient in a critical state, when you know nature requires all the help she can get to tide over the crisis, I beseech you not to trust to ethers and terebinthinae, because, as a stimulant with prompt effects, you will find we have no equal to alcohol, in one or other of its forms. It acts promptly. Strange to say, in the raging fever of typhoid, it lowers the pulse and temperature, and stimulates the excretary organs to throw off poisonous and dead tissue. When you have, for example, *post partum* hemorrhage, and your patient is almost dying, don't wait to discuss preferences. Its stimulation or death. Alcohol is the best medicine. Many such cases might be given to show its beneficial use as a drug—mighty men to the contrary, notwithstanding. In fever the abnormal heat is kept up by means of the fats of the body. The fats are the fuel of the system that keeps up the fires. If the fats become exhausted, then death ensues; the fires go out. If you can,

for the time being, put into the system an artificial fuel, such as alcohol, that will husband the adipose tissue and keep it as a store of reserve for a final and trial epoch in a fever, you have done a good deal to tide the patient over the critical period. Alcohol is given; it needs no digestion, but enters the system immediately; it is used as a temporary combustive, and in that way reserves for emergency the fats of the system. This is the specific benefit of such a hydro-carbon.

So, in mania, I have found four ounces of whiskey, in hot water, give sleep, when narcotics, such as chloral hydrate, have failed. Two such doses are usually sufficient. The after-effects on the system are not hurtful. If a patient is rolling in agony, am I to stand stoically by if he can be helped by drugs? If I have a case of melancholia, am I to withhold drugs when they will help? No sympathetic person would do such a thing. We may not cure, but we are often, by drugs, enabled to soothe the dying.

AMYL NITRITE—

This drug produces no special effect on the brain beyond the dilatation of cerebral vessels, and, as a consequence, fulness. It lowers the reflex excitability in the spinal cord. After administration, the heart increases in speed, and the vessels throb. The retina becomes congested, and the blood flows freely from cupped surfaces. This effect is not produced by its influence on the vaso-motor system, but depends upon its action in the blood on the walls of the arteries, in a static way.

In 1877 we gave it in epilepsy a fair trial. The majority of twenty-nine persons who took it was benefitted by it. In some cases the fits ceased altogether. In other cases the attacks were as frequent as formerly, but not so severe nor of so long duration. Some patients tell me that by taking it when feeling the fit coming on, they can overcome it. Another class has fits, but fewer and shorter. It is impossible to say, with any degree of exactitude, what the condition of the brain is in epileptic insanity, but in a large number of cases, patients are anaemic. As amyl nitrite

produces turgescence of the blood vessels, it is probable that it is beneficial by producing static effects on the blood, but, further than this, has no therapeutical value. In epileptic insanity eccentric causes are the most common, and although various stimulating causes may have been remedied, yet the injury inflicted may be permanent. Those who have epilepsy, and do not come to the asylum, should carry a small vial of the drug with them to inhale when they feel the attack coming on.

If the bromide has to be given for some time, the zinc salt is the best.

Formula :

Bromide of zinc.....	2 drachms.
Syrup.....	1 ounce.

Dose : 10 to 30 drops three times a day.

This is a powerful tonic, and will not produce skin eruption or cachexia, even if used for six months continuously. If you give K Br to children, use one-half K Br and give the other half hydrobromic acid. You will have the same effect, and a more pleasant mixture. In these salts it is not the alkalies that are helpful, but the halloid bodies. Very often I have given hydrobromic acid alone, with very good effect.

Brown-Sequard mixture :

K Br	
Na Br	
N H 4 Br	aa 3 drachms.
K I	
N H 4 I	aa $1\frac{1}{2}$ drachms.
(N H 4) 2 Co 3	1 drachm.
Tincture of calumba.....	$1\frac{1}{2}$ ounce.
Water	8 ounces.

Take $1\frac{1}{2}$ drachms before each meal and 3 at bedtime.

MELANCHOLIA, TREATMENT OF—

There is suicidal tendency in melancholiacs. If the patient's friends are wealthy, and can afford nursing, home relations and surroundings are the best. If these cannot be procured asylum treatment is necessary. Too often friends allow their sympathy to get the better of their judgment, and the patient suffers. Some will take food by coaxing, others will take food with the spoon, and sometimes a tube has to be used. We feed such by passing a tube through the nostrils. A large catheter may be used, and fluid poured through it. We often use the stomach-pump ; it is easily used, and not injurious to the patient, and will allow of more solid food being given than the catheter will. It is not well to give opiates in melancholia with delusions. If delusions exist in any form of insanity do not give opium. It has only a tendency to increase the malady through passive brain congestion. In melancholia without delusion, (emotional insanity), morphia may have excellent results, but it is a matter of experiment. If used hypodermically, add glycerine and water, beginning with $\frac{1}{4}$ gr. at a dose. You may increase it to $\frac{1}{2}$ grain. Some cannot tolerate opium. Then try one of the bromides with opium.

One of the most valuable remedial agents is phosphorous, which I prescribe in cod liver oil. The dose is from $\frac{1}{100}$ to $\frac{1}{2}$ grain, after meals. The cod liver oil is one of the best nutritive remedies we have. It is a fat producer. The brain has and needs a great deal of fat. The general effect of the phosphates is that of a stimulant, but they have a special power over the abnormal nervous system. Their use is not followed by a stage of depreciation, as in many drugs. I like to use remedies which, when separation between the constituents takes place, an acid is not produced. In phosphates you have the acids, also in phosphites. In the phosphides you have not the acids produced. The fluids in which the system is bathed have the alkaline re-action, so that which is acid in its action is not well to be introduced.

One of the most powerful nerve tonics is phosphide of zinc in doses of $\frac{1}{10}$ grain, with $\frac{1}{4}$ grain extract of nux vomica.

Formula :

R Phosphide of zinc	$\frac{1}{10}$	grain.
Fluid extract nux vomica	$\frac{1}{4}$	"
Quinine	$\frac{1}{4}$	"

Use as a pill. This will do for melancholiacs, and in anæmic cases will do well.

Strychnine is the best neural stimulant we have. It acts on the entire nervous system, and is not localized to the cord as some believe. It stimulates the vaso-motor, and musculo-motor centres, and effects the cerebral functions in a feeble way. Give nux vomica or strychnine on the interrupted plan. The drug should not be constantly administered ; but in rising doses. Keep up for ten days at a time, with intervals of five days.

PUERPERAL INSANITY, TREATMENT OF—

The toxic is the most common form. It simply means blood poisoning, which takes place from the effete substances of uterus. It may arise from alvine secretions also. This form is usually diagnosed by offensive discharges.

Treatment. Copious evacuations from the bowels, intra-uterine antiseptics. Condy's fluid especially is useful. Salicylic acid and tonics in the shape of nourishing foods and ferruginous medicines are indicated. As a tonic for such insanity, there is none better than pyrophosphate of Fe. It is soluble, easily assimilated, and provides nerve pabulum. As a general aperient, if indicated, I find nothing to equal compound rhubarb pill. The best antiseptic application that I can find is simple quinine in solution. Apply by syringe to parts effected. It is a powerful antiseptic, locally or generally.

The sympathetic form of puerperal mania is next in frequency. The mania is very pronounced. Here nerve influence is a cause, and excitement is great ; there is sleeplessness and delirious muttering. When such, they die from exhaustion. The same is true of anæmic cases. Morphine and atropine are best for these, given hypodermically. If

this is contra-indicated, try suppositories of chloral hydrate and camphor. A large number of this class recover. So we are encouraged in our efforts to restore a wife and mother to her family in her right mind.

PARESIS—

Give sedatives at first. Such must sooner or later go to an asylum. The syphilitic form you can stave off with Donovan's solution or other specifics.

Extravagant hopes have been laid on electricity as a general remedy. Its advocates have undertaken to say what currents are to be applied, when and how. One form or another is prescribed, and after holding a brief sway over the mind of the credulous, it shares the fate of other epidemics of charlatanism. Electricity can have no specific effect on insanity. In some forms of secondary dementia, the rules of elecro-therapy apply as an excitant. Be sure of the diagnosis before applying it, as much harm is done through ignorance. If we understood better the action of electricity, we would be better able to formulate the indications for the use of this potent agent in insanity, not to speak of general diseases.

New remedies are urged on the profession. They are manufactured largely to sell, serve their little day and pass into forgetfulness, usually with profit to the chemist; and they are followed by new substances, which pass through a like stage of temporary popularity, because of the laudations of some ardent member of our profession. The time has not come in which the practice of medicine has risen to the dignity of a science, as well as an art, and so far we do not find "a panacea for all the ills that flesh is heir to."

CLOSING REMARKS.

I have endeavored, gentlemen, in these fragmentary lectures, to give you an idea of the different forms of insanity, and of the method of treatment. I did not expect to teach you much beyond stimulating you to take up the study of mental diseases more than you have ever done heretofore. I think you will agree with me that in the course of the study of medicine, a great gap has been filled by putting this important subject of study in your curriculum. You will go away, not so much better equipped on account of the few lectures and clinics here, but you will have received better powers of observation in studying the psychical condition of your patients, and in that way be able to dispense more intelligently. Also in courts of law, I am convinced you are better equipped now to testify from what you know from your own personal observation. In a witness box there is nothing like personal knowledge of what you affirm. I have often been pleased to see some of the class (now in its 8th year) in the witness boxes, stating that they cared nothing of what the books said, but were testifying from what they knew from observation. I shall be glad to hear of your success, gentlemen ; and if you have cases of which you are not sure of the diagnosis, I will be happy to do what I can for you ; because two heads are better than one. I am proud of the medical men of this young country, and have no hesitation in saying that there is no country in Christendom which supplies better medical men than this Canada of ours. (Applause.)



